KING COUNTY CONVEYANCE SYSTEM IMPROVEMENT PROJECT

MILL CREEK/GREEN RIVER SUBREGIONAL PLANNING AREA

FINAL TASK 250 REPORT

June 2001

HDR

In Association with

Herrera Environmental Consultants, Inc.

ACKNOWLEDGEMENTS

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Note:
Some pages in this document have been purposefully skipped or blank pages inserted so that this document will copy correctly when duplexed.

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INTRODUCTION

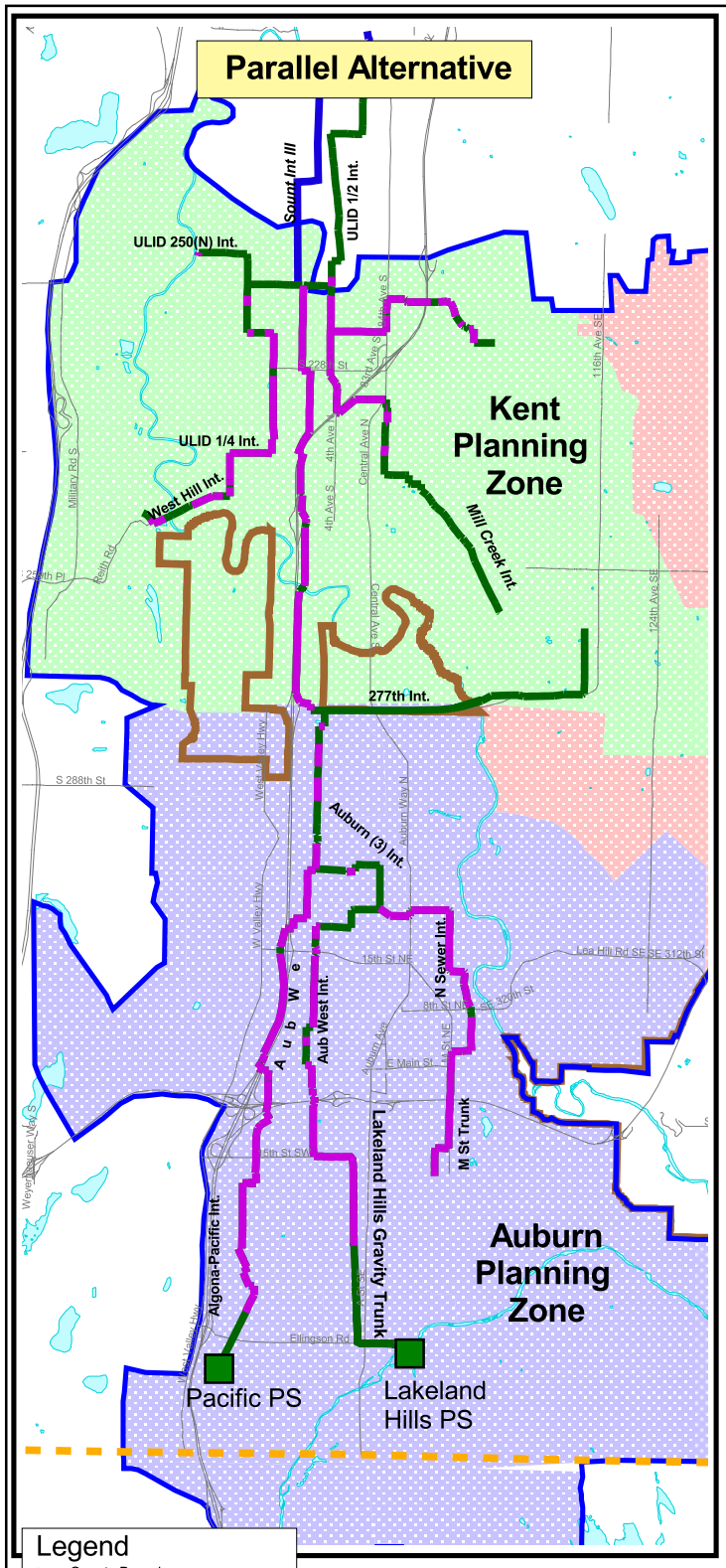
Conveyance alternatives were developed in task 240 for providing required hydraulic capacity through the planning period. The CSI project has adopted a set of objectives to be considered as the alternatives are evaluated and developed into a working alternative. The objectives to be considered as alternatives are developed include:

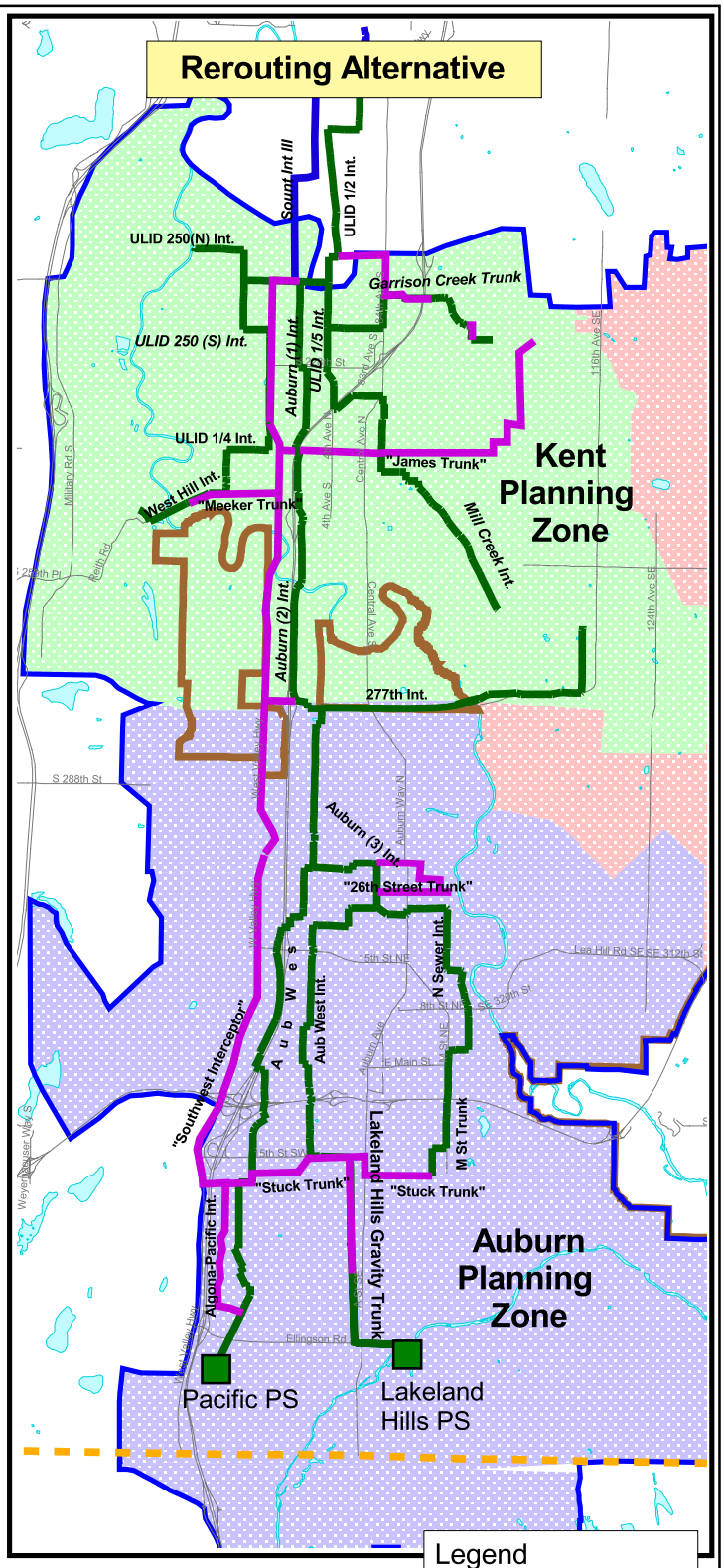
- Maximize service by gravity;
- Provide flexibility for adapting to changing growth patterns;
- Maximize long term facility use;
- Optimize capital and operating cost;
- Provide benefit to regional and local systems;
- Provide certainty to local service providers;
- Integrate projects with other RWSP programs.

This task report compares the alternatives proposed to provide regional wastewater service to the Mill Creek / Green River Subregional Planning Area through the year 2050 as described in the Task 240 Report. Figures 250-1 and 250-2 show proposed alternatives. For more detail refer to the Task 240 Report figures and text describing the proposed alternatives. This report begins with a discussion of factors common to all alternatives followed by detailed sections specific to alternatives in each planning zone. The report presents advantages and disadvantages of each alternative based upon impacts on existing facilities, preliminary cost estimates, impact of implementation of inflow and infiltration (I/I) strategies, operation and maintenance requirements, constructability constraints and concerns, the relationship to final WW2020 Plus adopted alternatives, and the 1958 PLAN. Facilities owned by of local agencies that might be incorporated into the regional wastewater system are identified.

The final section describes the working alternative for each planning zone. The configuration of the working alternatives were finalized after discussion of the proposed alternatives with local agencies and King County staff. Planning level costs are presented to the level of detail that would permit budgetary planning for capital improvements. Information on project timing and implementation is also presented.

Additional detail to the project level is presented in 2 supplemental volumes. Task 250 Supplement-Kent and Auburn presents information related to working alternative projects with the Kent and Auburn planning zones. Task 250 Report Supplement – Soos contains information on projects within the Soos planning zone.





Legend
- County Boundary
- MC/GR King Co Pump Stations
- Parallel Sewers
- MC/GR Sewerlines
- MC/GR Boundary
- South Interceptor III
- Urban Growth Line 2000

MC/GR Planning Zones
- Auburn Planning Zone
- Kent Planning Zone
- Soos Planning Zone

Legend
- County Boundary
- MC/GR King Co Pump Stations
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- MC/GR Boundary
- South Interceptor III
- Urban Growth Line 2000

MC/GR Planning Zones
- Auburn Planning Zone
- Kent Planning Zone
- Soos Planning Zone

Figure 250-1: Alternatives for Auburn and Kent Planning Zones Mill Creek / Green River Subregional Planning Zone

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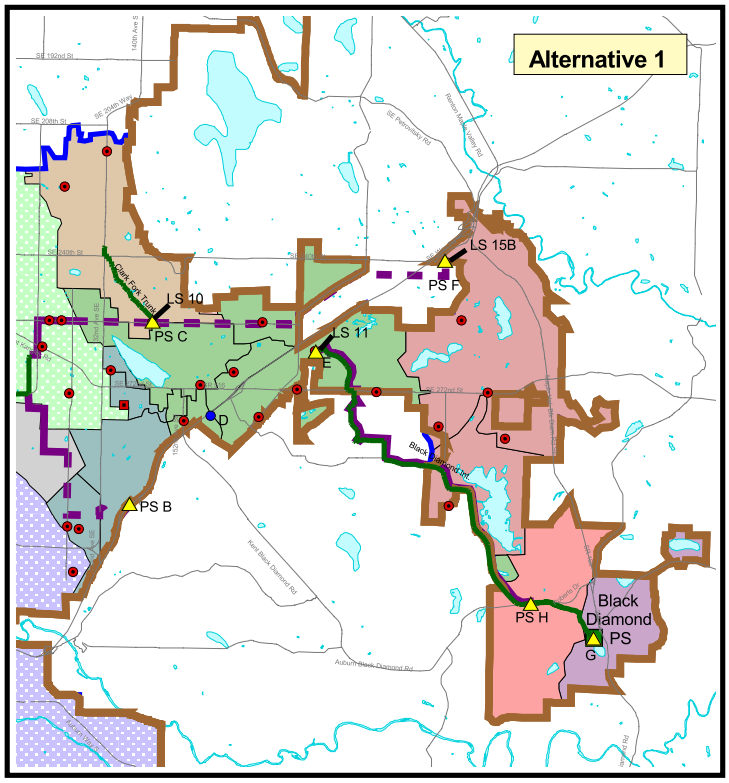

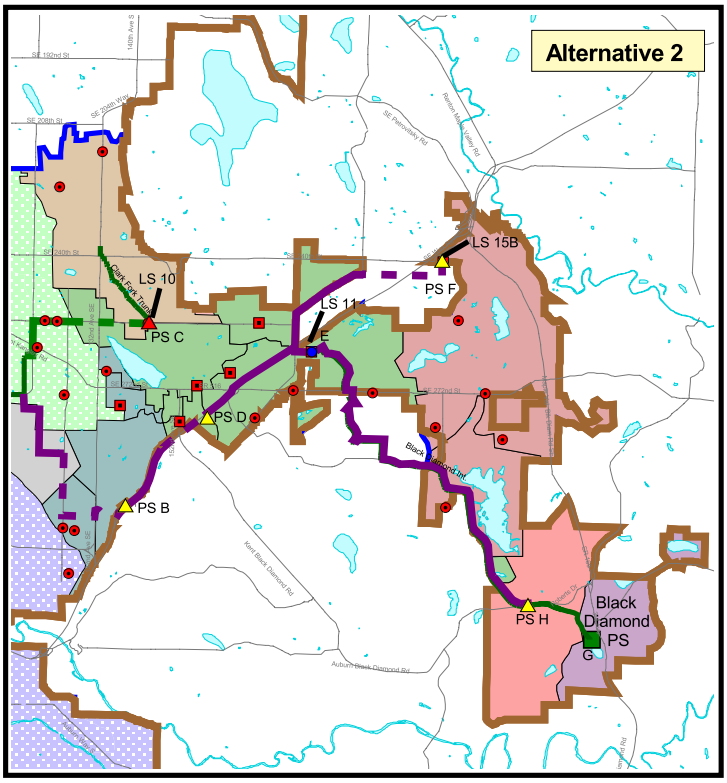

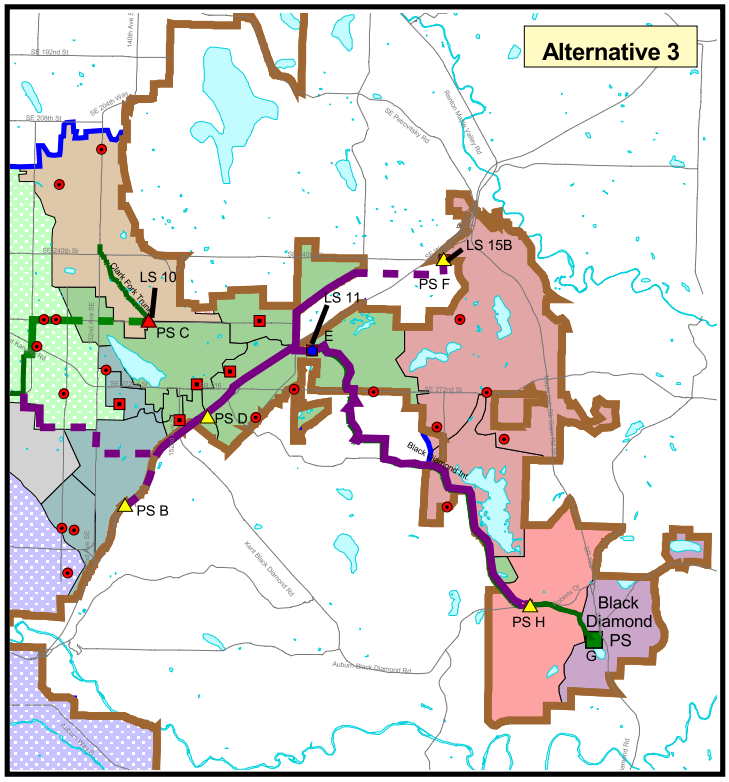

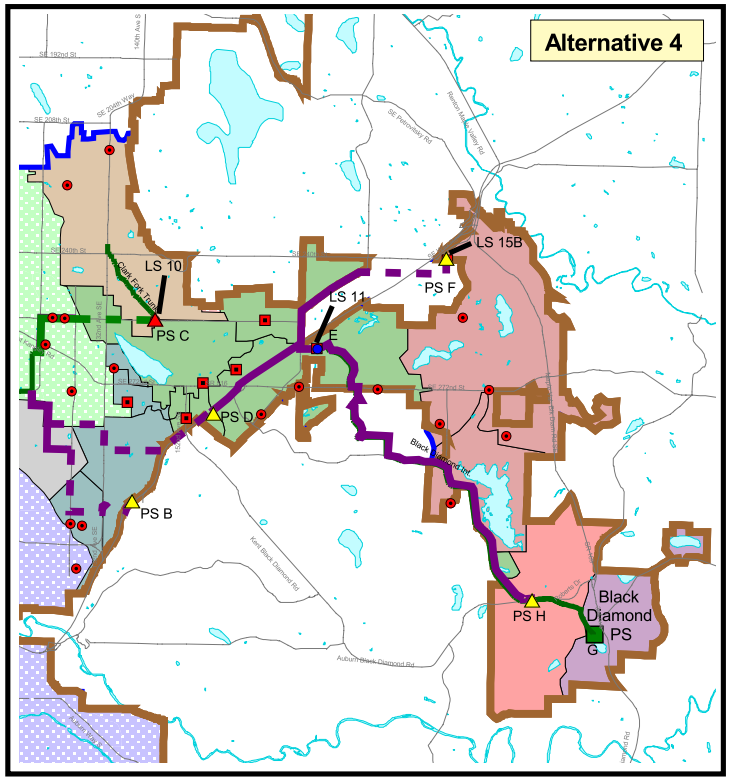

Figure 250 - 2: Alternatives for the Soos Planning Zone Mill Creek / Green River Subregional Planning Area

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Legend

Conveyance Sites
- Reference Point
- Proposed Regional PS
- Existing Local PS

MC/GR Local PS
- Local PS Continues
- Local PS Eliminated

Proposed Sewers
- Proposed Gravity
- Proposed Forcemain
- Existing Local Gravity
- Existing Local Forcemain
- MC/GR Sewer

- Local Sewerlines
- 98 UGA Boundary
- MC/GR King Co PS
- MC/GR Boundary

Flow Projection Area
- A
- B
- C
- E
- F
- G
- H

MC/GR Planning Zones
- Auburn Planning Zone
- Kent Planning Zone
- Soos Planning Zone

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GENERAL

The following section is a comparison of factors common to two or more alternatives within each planning zone.

IMPACTS ON EXISTING FACILITIES

The capacity of the majority of existing County facilities in the Mill Creek / Green River Subregional Planning Area will be exceeded by flow projected with a 20 year storm by the year 2010 based on the County's 1999 flow projections. (Refer to the Task 240 Report Figure 240- 5 which identifies sewer sections by the decade when capacity is exceeded.) All alternatives limit flow in existing sewers to available capacity by diverting flow to proposed facilities. Subsequent studies should identify and evaluate critical timing issues to insure that projects are completed before existing sewers reach capacity. All flow originating within the MC/GR is conveyed to the South Plant through the South Interceptor system.

KENT AND AUBURN PLANNING ZONES

In the Kent and Auburn Planning Zones, there are some short, isolated sections of sewer which were not identified for replacement although they may be slightly surcharged based on projected peak flow conditions. This includes sewers with negative slope (as reported on asbuilts) and a few very flat sewers with steeper pipes immediately upstream. A few sections of existing King County sewers with adequate capacity are interspersed with inadequate sections. The subsequent, more detailed studies must examine ways to fully utilize this capacity by developing specific projects to eliminate these critical sections. For example, in Kent ULID 250 N-01 to S-01 is exceeded in 2030 but sewers upstream and downstream are adequate through the study period.

SOOS PLANNING ZONE

There are two County facilities in the Soos Planning Zone. The Clark Fork Trunk has adequate capacity to carry projected flow through 2050. The Black Diamond Trunk, pump station, and force main capacity is exceeded by 2010 based on County flow projections. Several County regional system alternatives have been proposed to provide capacity to convey projected flow through the study period. Existing local facilities have been designed based on local comprehensive plans to meet the future demands as projected by the methodology used by that agency. Based on King County flow projections, local facility capacity is exceeded earlier than local agency projections.

Some alternatives propose that specific existing Soos Creek WSD facilities can become incorporated into the regional wastewater system. These local facilities include Lift Stations 10, 11, and/or 15B and associated force mains and gravity sewers. In Alternative 1, all proposed facilities coincide with existing local facilities and generally conforms to long term District plans. For Alternatives 2, 3, and 4, Lift Station 10 would be adequate through 2050 and Lift

Station 11 would be eliminated, Lift Station 15B would be regionalized, and as many as five other local pump stations could be eliminated. Some rerouting of flow would be required by the District to eliminate the pump stations. In any alternative where proposed routes coincide with existing local facilities, the local facilities would be regionalized and, if necessary, additional capacity would be constructed. For all alternatives, additional regional facilities may be required to convey flow to the proposed pump stations, especially in the Lift Station 15B service area, based on current criteria for regional facility qualification. More detailed studies must investigate siting of PS "F" to collect more flow from Maple Valley. Subsequent studies must investigate the suitability of existing facilities and consider timing issues to insure that local facility capacity will not be exceeded before regional facilities are available. For example, it appears that Lift Station 10B may be required before flow can be diverted away from Lift Station 10 as proposed for Alternatives 2, 3, and 4.

INFLOW AND INFILTRATION (I/I)

Inflow and infiltration represents about 87 percent of the County's peak flow projection for the MC/GR. The I/I component of flow projections far exceeds the base flow. Table 250-1 summarizes 2020 and 2050 projected base flow, I/I flow, and total peak flow for 5 and 20 year storms for each planning zone.

Table 250-1. Projected Flow Components by Planning Zone including 7 percent I/I Degradation per Decade

	Year 2020					Year 2050				
		5 year storm		20 year storm			5 year storm		20 year storm	
	Base flow (mgd)	5 year peak I/I flow (mgd)	Projected peak flow (mgd)	20 year peak I/I flow (mgd)	Projected peak flow (mgd)	Base flow (mgd)	5 year peak I/I flow (mgd)	Projected peak flow (mgd)	20 year peak I/I flow (mgd)	Projected peak flow (mgd)
Auburn Planning Zone	7.39	50.1	57.52	63.3	70.70	9.12	53.1	62.3	67.1	76.2
Kent Planning Zone	6.65	43.5	50.11	50.7	57.34	8.51	46.1	54.6	53.7	62.2
Soos Planning Zone	3.79	26.3	30.09	29.7	33.49	4.92	27.9	32.8	31.5	36.4
MC/GR	17.82	119.9	137.73	143.7	161.53	22.55	127.1	149.6	152.3	174.9

Two I/I reduction scenarios were modeled to analyze potential benefit with respect to the proposed alternatives. One scenario assumes a 20 percent reduction in the County projected I/I component for all Flow Projection Areas (FPAs), in all decades, under all storms. This reduction would require rehabilitation of both existing and yet-to-be-built sewers throughout the MC/GR over decades to come. The second scenario assumes that I/I would be limited to 1,100 gallons per acre per day (gpad) for all new construction but avoids rehabilitation of existing sewers. The projections for current sewered area continue to be escalated by a 7% per decade degradation factor. It was assumed that in the year 2000 about 22,316 acres in the MC/GR are unsewered. By 2010 only 11,159 acres will still be unsewered and by 2020 all area in the MC/GR will be sewered. Figure 250-3 shows FPAs coded by the percentage of area that is sewered in 2000.

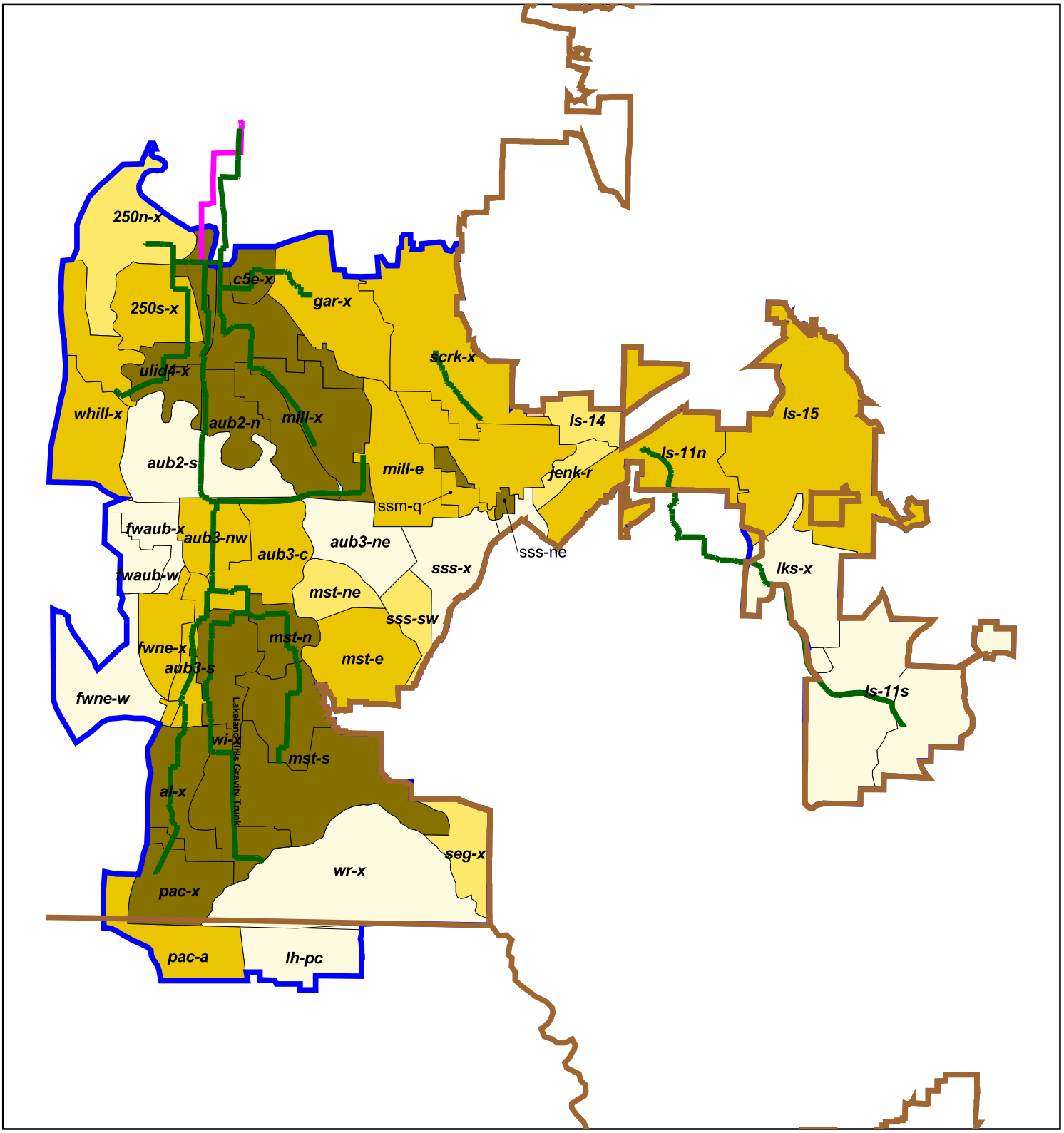

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Figure 250 - 3: Flow Projection Areas Shaded by Percent Sewered in the Year 2000 Mill Creek / Green River Subregional Planning Area

Legend

- 98 UGA Boundary
- MC/GR Sewerlines
- South Interceptor III
- MC/GR Boundary

MC / GR Sewers

- 0 - 25% sewered in 2000
- 26 - 50% sewered in 2000
- 51 - 75% sewered in 2000
- 76 - 100% sewered in 2000

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Table 250-2 compares projections of total peak flow in 2050 by planning zone with both scenarios. The table shows an average reduction in peak flow of about 17 percent for the "20 percent" scenario and about 20 percent for the "1,100 gpad" scenario. The highest reduction in peak flow occurs in the Auburn Planning Zone which has the highest projected total peak flow.

Table 250-2. Comparison of 2050 Peak Flow Projections with Two I/I Reduction Scenarios

	20 Year Storm Peak				
		Projected I/I Reduced by 20 Percent		Projected I/I Limited to 1,100 gpad for Sewers Built After Year 2000	
	Projected Peak Flow (mgd)	Reduced Projected Peak Flow (mgd)	Percent Reduction of Peak Flow	Reduced Projected Peak Flow (mgd)	Percent Reduction of Peak Flow
Auburn Planning Zone	76.2	62.8	18%	59.2	26%
Kent Planning Zone	58.5	48.3	18%	46.9	15%
Soos Planning Zone	40.2	33.3	17%	33.2	17%
MC/GR	174.9	144.4	17%	139.3	20%

It also has the most unsewered area and the most proposed facilities. Additional tables showing the reduced flows routed through the system have been included in Appendices 250-A through 250-J.

All alternatives benefit from reduced I/I since smaller pipe can provide the required capacity. Figure 250-4 shows sewers color-coded by the decade capacity is exceeded using current flow projections before and after an assumed I/I reduction strategy is implemented.

In the Kent and Auburn Planning Zones, the length of pipe required is also reduced. The greatest benefit is to the parallel alternative where estimated cost can be reduced as much as 25 percent. The rerouting alternatives have significantly less pipe and I/I reduction has proportionately less impact. Immediate implementation of new construction standards may be able to defer or eliminate construction of additional conveyance capacity or reduce the capacity required for some sections of existing sewers.

In the Soos Planning Zone, the benefit of I/I reduction will be realized in the sizing of sewers and pump stations. Immediate investment in the "1,100 gpad" scenario, would support design of smaller pump stations and reduction of pipe diameters by one to two sizes. Estimated project costs may be reduced by 10 to 26 percent.

Subsequent studies should investigate the feasibility of implementing the "1,100 gpad" scenario in conjunction with the working alternative. The "20 percent" scenario alone may not yield results soon enough to impact the design of facilities that are expected to be exceeded by the year 2010. Direct costs are likely to be much higher to implement the "20 percent" scenario than the "1100 gpad" scenario.

OPERATION AND MAINTENANCE (O&M) REQUIREMENTS

Each alternative will increase system reliability and also County operation and maintenance responsibilities. The alternatives to serve the MC/GR propose gravity sewers, forcemains, and at least four to five new pump stations. Pump stations require more intense operation and maintenance and are generally less reliable than gravity sewers.

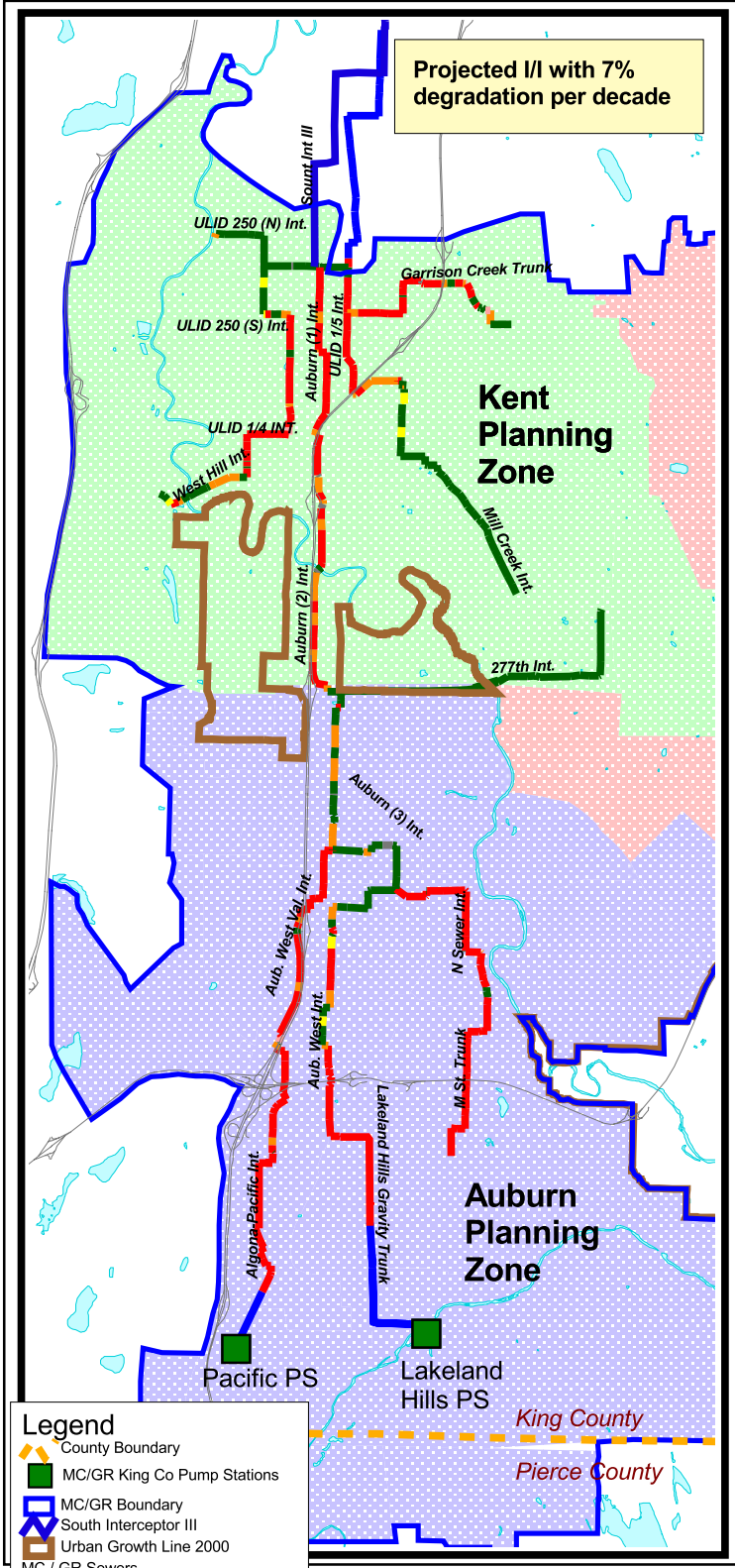
In the Kent and Auburn Planning Zones, at least 85,000 linear feet and as much as 121,000 linear feet of sewer would be added to the County system. The rerouting alternative requires about 28 percent less pipe than the parallel alternative. Interties between proposed and existing sewers may be recommended in subsequent studies and may affect O&M requirements. Upgrades are planned for the existing Pacific and Lakeland Hills pump stations but no new pump stations are planned.

Operation and maintenance activities in the Soos Planning Zone would be significantly increased by all alternatives. All alternatives increase the County's inventory of sewers in the MC/GR by about 1300 percent. At least 91,000 linear feet and as much as 107,000 linear feet of sewer will be added to the system. Three alternatives include five regional pump stations. Three alternatives incorporate the Soos Creek WSD Lift Station 10 however, if flow is not diverted away before LS 10 capacity is exceeded, the District-planned replacement may still be required. There is a significant difference between alternatives in terms of the number of local pump stations that could be eliminated. Three alternatives allow 6 local pump stations to be eliminated. In all alternatives, one or more local pump stations that currently discharge to Soos Creek WSD Lift Station 15B could become regional facilities.

Tunnels could be constructed to eliminate pump stations. They would significantly reduce O&M effort but do not appear to be viable options due to cost and the limitations of tunneling for pipes of the diameter proposed. Subsequent studies will examine tunnels between points "D" and "B", points "F" and "D", and points "G" and "H" in more detail. Tunnel construction cost should be compared to the cost of construction, operation, and maintenance of any pump station it could eliminate. The lowest preliminary estimated cost for a pump station is about $3.5 million.

PRELIMINARY COST ESTIMATES

Preliminary planning level construction cost estimates are based on general pipe sizes and quantities able to convey predicted flows and are shown in Table 250-3. These estimates are shown in more detail in Appendix K. Project costs presented in this report are developed from the cost curves, models, and tables presented in the January 7, 2000 draft CSI Report on planning level cost estimates. Pipeline costs are estimated using the Base Cost with Imported Fill, Paving, Utilities & Dewatering components. These preliminary costs were later compared to the Final CSI cost estimating model and found to be within 5 percent. Final planning level cost estimates from detailed work presented in 250 Report Supplement are summarized in later sections of this report



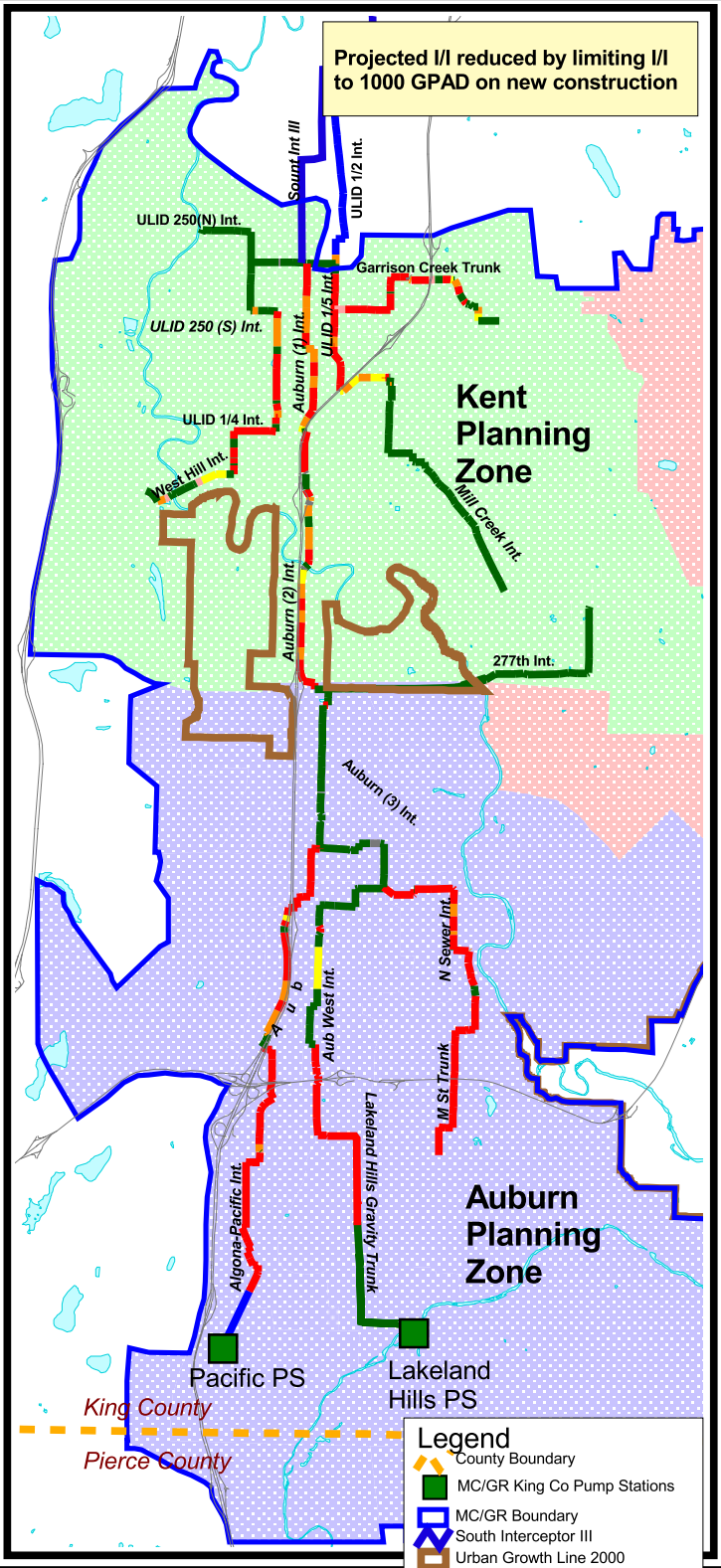


Figure 250 - 4: Benefit of I/I Reduction
Mill Creek / Green River Subregional
Planning Area Sewers color-coded
by decade capacity is exceeded

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Table 250-3. Preliminary Planning Level Construction Cost Estimates

Alternative	Pump Stations	Local Lift Stations Eliminated	Pipe Length (ft)	Estimated Construction Cost (million dollars)
Auburn Planning Zone				
Parallel			69,000	$38.0
Rerouting			55,800	$38.9
Kent Planning Zone				
Parallel			53,600	$39.5
Rerouting			36,200	$34.9
Soos Planning Zone				
Alternative 1	5	3	107,000	$64.4
Alternative 2	4	8	91,400	$75.7
Alternative 3	4	8	98,600	$70.3
Alternative 4	4	8	106,500	$72.0

(1999 dollars)

Pipeline lengths are shown to distinguish the extent of the proposed alternative although cost is highly dependent on pipe size. The cost difference for constructing along more urbanized, more congested alignments may underestimate the cost of the parallel alternatives. However, more detailed studies should seek parallel alignments that minimize urban impacts.

In Kent and Auburn Planning Zones, the parallel alternative requires significantly more pipe with generally smaller diameters than the rerouting alternative. No new pump stations are required for regional conveyance in these planning zones.

In the Soos Planning Zone, the existing Soos Creek WSD Lift Station 10 may need to be replaced if facilities proposed in Alternatives 2, 3, and 4 are not completed before additional capacity is required. Alternative 1 presents pipeline alignments that best utilizes capacity of existing local facilities.

CONSTRUCTABILITY CONSTRAINTS AND ISSUES

Constructability constraints include environmental conditions that require specific designs or construction techniques, schedule requirements, and intertie options. Possible issues include alignment variations, pump station siting, storage, permitting requirements, partnership options, and regional planning review and coordination requirements. More detailed studies should further investigate and identify these constraints and issues for the preferred alternative.

In the Kent and Auburn Planning Zones, construction of the parallel alternatives would occur in more congested areas than the rerouting alternatives. The Green River presents a major obstacle for gravity sewer construction but the existing Auburn Interceptor siphons have capacity to carry the peak projected flow. Subsequent studies should evaluate the opportunity for using them to convey the projected flow across the Green River.

In the Soos Planning Zone, the Alternative 1 alignments appear to be more congested. The other alternatives all involve a new sewer corridor along SR 18 with the potential for obstacles not foreseen at this level of planning. All alternatives have the potential for stream and wetland crossing impacts. The Task 250 Report Supplement identifies construction requirements more specifically.

1958 PLAN ALTERNATIVES

The 1958 Plan proposed gravity sewers and two pump stations to serve the entire Green River Sewerage Area. The Urban Growth Area (UGA) adopted under the Growth Management Act redefined the area to be served by King County. The 1958 Plan proposed sewers to convey flow from the Soos Planning Zone following corridors by gravity. Sections of these corridors fall outside the UGA or pass through sensitive areas which now eliminates the opportunity of providing service by gravity. Refer to figures in Task 240 Report.

WASTEWATER 2020 PLUS ADOPTED ALTERNATIVES

In the Kent and Auburn Planning Zones, the WW2020 Plus Study Final Report considered that short sections of the Auburn Interceptor Sections 1, 2, and 3 would reach capacity during peak flow events as early as 2010 but that with some isolated surcharging during extreme peak flows it would be adequate until 2018. The County's 1999 projections show more sewers at capacity by 2010. If implementation of alternatives is deferred then surcharging is more likely and may be increasingly more severe.

The WW2020 Plus Study investigated construction of a sewer parallel to the Auburn Interceptor with a minimum diameter of approximately 48 inches by 2020 at a cost of $31 million in 1995 dollars (about $38 million in year 2000 dollars based on Seattle ENR index). The parallel sewer was rejected in favor of storage facilities near the upstream end to store peaks for later conveyance. Storage capacity was to be added in phases with 0.6 mgd available by 2020 and 1.2 mgd available by 2050. Cost for each phase was estimated at about $2.24 million in 1995 dollars. Under the WW2020 Plus, the proposed conveyance and storage facilities were resized and rephased to incorporate a 30 percent systemwide I/I reduction. A 30 percent I/I reduction in the earlier flow projection eliminated the storage facilities for the Auburn Interceptor and upgrades in the Algona-Pacific and Auburn West Valley Interceptors. However, the feasibility and cost of achieving the 30% reduction was not presented. The Wastewater 2020 Plus Study Final Report did not address capacity issues in the other interceptors in Auburn.

Since the WW2020 Plus study, flow from the Soos Planning Zone has been routed to the upstream end of the Auburn Interceptor Section 2 by way of the new Mill Creek Relief Sewer (277th Street Interceptor). This change makes the storage option inadequate to prevent flow from exceeding capacity in the Auburn Interceptor. Systemwide I/I reduction of 30 percent has not been achieved although this target is the objective of the current, system-wide RWSP I/I Reduction Program. Transfer of flow to Pierce County was also evaluated and determined to not be feasible.

PROJECTS CONVEYANCE

Implementation of the working alternatives will require definition of specific projects for purposes of design and construction. Projects are prioritized by how soon flow exceeds capacity and/or to remedy structural defects. The first priority must be to convey flow that exceeds the capacity of the Auburn Interceptor Sections 1 and 2 in the Kent Planning Zone since it conveys all the flow from the Auburn and Soos Planning Zones. Replacement of the corroded portion of the Lakeland Hills gravity sewer was underway at the time of this study. Projects generally could be defined within each permitting jurisdiction to reduce permitting impacts. Further project definition and prioritization is discussed within the following sections on each planning zone.

Projects in the Auburn Planning Zone are generally located within the Auburn permitting jurisdiction. Some sections within the Auburn Interceptor Section 3 have adequate capacity through the study period. Final predesign studies may choose to optimize project scheduling by utilizing capacity available in Section 3. If I/I reduction targets are realized, additional capacity in this section may not be required. Additional options to consider include small isolated projects to upgrade critical sections, surcharge analysis to evaluate timing and impact of flow exceeding capacity, and storage.

AUBURN PLANNING ZONE

Two competing alternatives have been proposed for the Auburn Planning Zone. One alternative proposes construction of sewers parallel to the existing County interceptors. The other alternative proposes one major interceptor and some smaller trunks to reroute the flow.

AUBURN PARALLEL ALTERNATIVE

This alternative diverts flow from the existing sewers through interties to parallel gravity sewers. The capacity of the existing and new parallel sewers would be designed to carry the peak projected flow. Generally, the existing County sewers would continue to collect flow from local sewers and side sewers. However, flow from some portions of the local system could be collected directly by a new parallel sewer depending on specific alignments chosen. Flow from the existing County sewers would be diverted to the new parallel sewers at locations selected in subsequent studies. Upgrade projects required for Pacific and Lakeland Hills Pump Stations are now in progress.

More detailed studies should investigate the opportunity for doing small isolated projects that might eliminate substantial lengths of new parallel sewer construction. For example, nearly 2,000 feet of new sewer parallel to the West Interceptor north of SR 18 might be avoided if capacity can be increased through 400 feet of existing sewer. These opportunities will be explored and be detailed in the Task 250 Report Supplement.

The preliminary planning level construction cost estimate for the Auburn parallel alternative is approximately $38 million to construct approximately 69,000 linear feet of 12 to 42 inch diameter gravity sewer. This is similar to the rerouting alternative. Higher cost could be incurred due to construction within the congested business, traffic, and utility environments along large sections of this alternative. This alternative could also incur higher restoration costs depending on specific selected alignments.

Inflow and infiltration reduction would reduce cost by reducing both pipe diameters and length. A 20 percent I/I reduction, achieved either through rehabilitation and/or enforcement of stringent new construction standards, could reduce the construction cost of parallel conveyance improvements by about $8.9 million. The cost to achieve any I/I reduction has not been determined.

Operation and maintenance activities in this planning zone would be increased by both alternatives. It increases the County's inventory of gravity sewers in the Auburn Planning Zone by about 83 percent. The parallel alternative requires 13,200 linear feet more pipe than the rerouting alternative. Final predesign studies should investigate ways to minimize local impacts and the length of proposed routes.

There are more constructability constraints and issues relative to this alternative than to the rerouting alternative. There are about 3.5 miles of parallel sewer on or adjacent to public trails which are avoided by the rerouting alternative. The parallel sewers are generally routed through

more congested sections of Auburn and in streets that carry a high volume of traffic than the rerouting alternative. Those areas are also congested with other utilities including the side sewers connected directly to the existing County interceptors. A portion of the proposed route is adjacent to a wetland in the vicinity of Mill Creek (WRIA 09-0051 a.k.a. Hill Creek) for both alternatives and the final design should avoid adverse impacts. The two stream crossings and six railroad crossings could be design constraints. Since some sections are parallel to a public trail there may be additional public safety issues in that area during construction as well as right-of-way acquisition. Final predesign studies should investigate ways to reduce the impact of construction by using trenchless technology and by selection of final alignments.

Several major projects could be defined parallel to each of the major interceptors. There are some short isolated sections that could be implemented separate from the major projects.

AUBURN REROUTING ALTERNATIVE

This alternative generally diverts flow collected from the south and east portions of the planning zone around the existing sewers. In effect the service area of the existing system is reduced to avoid collecting flow in excess of existing capacity. Upgrades are required for Pacific and Lakeland Hills Pump Stations.

The preliminary planning construction cost estimate for the Auburn rerouting alternative is approximately $38.9 million to construct approximately 55,800 linear feet of 18 to 54 inch diameter gravity sewer. This is similar to the parallel alternative. In comparison to the parallel alternative, this alignment is generally avoids congested areas and restoration costs would be lower.

Inflow and infiltration reduction would reduce cost by reducing both pipe diameters and length. A 20 percent I/I reduction, achieved either through rehabilitation and/or enforcement of stringent new construction standards, could reduce the construction cost of parallel conveyance improvements by about $7.2 million. Cost to reduce I/I has not been determined.

Operation and maintenance activities in this planning zone would be increased by both alternatives. It increases the County's inventory of gravity sewers in the Auburn Planning Zone by about 69 percent. The rerouting alternative requires 13,200 linear feet less pipe than the parallel alternative. Subsequent reports should investigate ways to reduce the length of proposed routes. For example, shorter alignments to route flow east from the M Street Trunk through side streets and easements may be feasible.

There are fewer constructability constraints and issues relative to this alternative than to the parallel alternative. The routes are generally in public right-of-ways. The proposed sewer alignments avoid most of the congested sections of Auburn but some are in streets that carry a high volume of traffic. Five stream crossings and two railroad crossings could be design constraints. The supplemental studies will consider moving all or parts of the proposed alignment along the West Valley Highway to the SR 18 right-of-way. West Valley Highway was selected because it appeared to be somewhat lower elevation and possibly less

environmental impact in the vicinity of Mill Creek (WRIA 09-0051 a.k.a. Hill Creek). Scheduling of road improvement projects may be a consideration for final predesign studies.

Several major projects could be defined. The portion of the "Southwest Interceptor" parallel to the Auburn Interceptor Section 3 could be delayed at least 10 years by interim management of surcharge with storage or small projects to increase capacity through bottlenecks. The section of the "Southwest Interceptor" parallel to the Auburn West Valley Interceptor north of SR 18 is required by all other proposed sewers and is a very high priority. The "Southwest Interceptor" continues south from SR 18 to the Pacific Pump Station forcemain. The "Stuck Trunk" and "Lakeland Hills Trunk" are east from there. These could be separated into two or more projects or combined as one. The proposed "26th Street Trunk" project is not required until 2020 but should coordinated with local development. There are some short isolated sections that could remain separate from the major projects.

KENT PLANNING ZONE

Two competing alternatives have been proposed for the Kent Planning Zone. One alternative proposes construction of sewers parallel to the existing County interceptors. The other alternative proposes one major interceptor and some smaller trunks to reroute the flow.

KENT PARALLEL ALTERNATIVE

This alternative diverts flow from the existing sewers through interties to parallel gravity sewers. The capacity of the existing and new parallel sewers would be designed to carry the peak projected flow. Generally, the existing County sewers would collect flow from local sewers and side sewers. However, flow from some portions of the local system could be collected directly by a new parallel sewer depending on specific alignments chosen. Flow from the existing County sewers would be diverted to the new parallel sewers at locations selected in subsequent studies.

The preliminary planning level construction cost estimate for the Kent parallel alternative is approximately $39.5 million to construct approximately 53,600 linear feet of 10 to 60 inch diameter gravity sewer. This is about $4.6 million more than the rerouting alternative. Higher cost could be incurred due to construction within the congested business, traffic, and utility environments along large sections of this alternative. This alternative could also incur higher restoration costs depending on specific selected alignments.

Inflow and infiltration reduction would reduce cost by reducing both pipe diameters and length. A 20 percent I/I reduction, achieved either through rehabilitation and/or enforcement of stringent new construction standards, could reduce the construction cost of conveyance improvements by about $8.5 million. Cost to reduce I/I has not been determined.

Operation and maintenance activities in this planning zone would be increased by both alternatives. It increases the County's inventory of gravity sewers in the Kent Planning Zone by about 67 percent. The parallel alternative requires 17,400 linear feet more pipe than the rerouting alternative. Subsequent studies should investigate ways to reduce the length of proposed routes.

There are more constructability constraints and issues relative to this alternative than to the rerouting alternative. The routes are generally in public right-of-ways. About a mile and a half of this alternative is on or adjacent to public trails or railroad right-of-ways which are avoided by the rerouting alternative. Fewer of the proposed sewers are routed through the congested sections of Kent and in streets that carry a high volume of traffic and other utilities with this alternative. The eight stream crossings and two railroad crossings could be design constraints. Some stream crossings are avoided by the rerouting alternative. Both alternatives must cross the Green River. Several alignments parallel streams in both alternatives but the distance is about half as much for this alternative. Both alternatives include requirements to increase capacity of the Garrison Creek Relief Trunk through sensitive areas. More easements through private

property could be required by this alternative. Those sections parallel to the public trail may present public safety issues during construction as well as require right-of-way acquisition.

Subsequent studies should investigate ways to reduce the impact of construction by using trenchless technology and by selection of alignments.

Highest priority in the MC/GR is to provide capacity for Auburn Interceptor Sections 1 and 2. The parallel sewers could be considered one project or it could be divided at the Green River siphon or the SR 516 crossing into north and south projects. Each interceptor that requires additional capacity could be considered a separate project. There are some short isolated sections that could remain separate from the major projects.

KENT REROUTING ALTERNATIVE

This alternative generally diverts flow collected from the south, west, and east portions of the planning zone around the existing sewers. In effect the service area of the existing system is reduced to avoid collecting flow in excess of existing capacity. Subsequent studies should investigate upsizing some isolated sections that limit overall capacity of the existing sewers.

The preliminary planning level construction cost estimate for the Kent rerouting alternative is approximately $34.9 million to construct approximately 36,200 linear feet of 12 to 72 inch diameter gravity sewer which is about $4.6 million less than the parallel alternative. The "Meeker Trunk" and "James Trunk" are about 5,000 and 4,000 linear feet long, respectively. They each convey flow that would otherwise exceed capacity of about 9-11,000 feet of existing sewer. Lower cost could be incurred due to less construction within the congested business, traffic, and utility environments. This alternative could also incur lower restoration costs depending on specific selected alignments.

Inflow and infiltration reduction would reduce cost by reducing both pipe diameters and length. A 20 percent I/I reduction, achieved either through rehabilitation and/or enforcement of stringent new construction standards, does not produce significant savings for this alternative.

Operation and maintenance activities in this planning zone would be increased by both alternatives. The County's inventory of gravity sewers in Auburn Planning Zone would increase by about 44 percent. Rerouting requires approximately 17,400 linear feet less pipe than the parallel alternative. Subsequent studies should investigate shorter alignments to route flow east from the M Street Trunk through side streets and easements to reduce the length of proposed routes.

There are fewer constructability constraints and issues relative to this alternative than to the parallel alternative. This alternative is not on or adjacent to public trails or railroad right-of-ways which are used by the parallel alternative. Fewer of the proposed sewers are routed through the congested sections of Kent and in streets that carry a high volume of traffic and other utilities. Five stream crossings and two railroad crossings could be design constraints. The parallel alternative requires more stream crossings. Both alternatives must cross the Green River. Several alignments parallel streams in both alternatives but the distance is about twice as much

for this alternative since the West Valley Highway alignment is parallel to an unnamed stream (WRIA 09-0012) through the industrial area. Both alternatives include a requirement to increase capacity of the Garrison Creek Relief Trunk through sensitive areas. Fewer easements through private property could be required by this alternative.

Subsequent studies should investigate ways to reduce the impact of construction by using trenchless technology and by selection of alignments. The proposed alignment along the West Valley Highway should be compared with to the opportunity for moving all or parts of the alignment to the SR 167 right-of-way. West Valley Highway was selected because it appears to be somewhat lower elevation and possibly less environmental impact in the vicinity of Mill Creek near SR 18.

Highest priority in the MC/GR is to provide relief for the Auburn Interceptor Sections 1 and 2. The portion of the "Southwest Interceptor" parallel to the Auburn Interceptor Sections 1 and 2 could be considered one project or it could be divided at the Green River siphon or the SR 516 crossing into north and south projects. The Garrison Creek Relief Trunk, "Meeker Trunk" and "James Trunk" could be managed as separate projects. There are some short isolated sections that could remain separate from the major projects.

SOOS PLANNING ZONE

Four competing alternatives have been proposed for the Soos Planning Zone. One alternative proposes construction of sewers parallel to the existing local interceptors and five new pump stations. The other alternatives propose one major interceptor parallel to the south boundary of the UGA then northwest to the S. 277th Interceptor, some sewers parallel to existing local interceptors, four new pump stations, and utilization of Soos Creek WSD Lift Station 10. However, planned replacement of Lift Station may be required in any case if regional facilities are not constructed by the time additional capacity is LS 10 is required.

ALTERNATIVE 1

This alternative generally duplicates the alignments of the Soos Creek WSD comprehensive plan but uses County flow projections to size facilities. Regional facilities would replace Soos Creek WSD Lift Stations 10, 11, and 15B and sewers would be constructed parallel to existing facilities. The local agency system of small pump stations would continue to pump flow to the 256th Corridor with no potential for gravity flow in the future. Based on specific service area, some of these pump stations and others in pumping to Lift Station 15B could be regionalized in the future. Subsequent studies should investigate alignments to route flow southwest from S 256th Street sewers to the S. 277th Interceptor through side streets and easements to reduce the length of proposed routes.

The existing Black Diamond pump station appears to be adequate for the flow projection for its immediate service area. The larger Black Diamond service area must be served either by local pump stations or a second regional pump station. In either case, additional regional pipeline capacity, parallel to the existing Black Diamond gravity sewer, is needed to convey flow to Lift Station 11. A new regional station appears best located along the existing siphon alignment near Rock Creek, to where flow exceeding the siphon capacity could be diverted. Flow projections indicate this new station and additional parallel pipeline capacity would be required by 2010. This requirement is identical for each Soos Planning Zone alternative.

The preliminary planning level construction cost estimate for Alternative 1 is approximately $64.4 million to construct approximately 107,000 linear feet of 12 to 27 inch diameter gravity sewer and five pump stations. The preliminary planning level estimated construction cost is $5.9 to $11.3 million lower than the other alternatives even with one more pump station and more pipe length. This alternative utilizes some existing Soos Creek WSD pipelines to a greater extent than the other alternatives. Unlike all other alternatives, it depends on the continued operation of many local pump stations to convey flow north to S 256th Street.

Inflow and infiltration reduction would reduce cost by reducing both pipe diameters and length. A 20 percent I/I reduction, achieved either through rehabilitation and/or enforcement of stringent new construction standards, could reduce the cost of parallel conveyance improvements by about $5.6 million. Cost to achieve required I/I reduction has not been determined.

Operation and maintenance would be required for five new pump stations and 107,000 linear feet of sewer which is approximately 15,600 linear feet more pipe than the lowest alternative. Several local pump stations south of S 256th Street could eventually become regional facilities and require additional operation and maintenance effort in this planning zone.

There are many constructability constraints and issues for all alternatives, but most significant is the difference between Alternative 1 and the other alternatives. Alternative 1 parallels existing sewers and some alignments are through relatively congested areas. The other alternatives generally avoid more of the congested areas. Alternative 1 appears to approximate local system development most closely.

Each pump station and related force main could be implemented as separate projects. Gravity sewers could be implemented as separate projects. Priority for each project may be determined by priorities of Soos Creek WSD to insure that new facilities are completed before capacities of District facilities are exceeded.

ALTERNATIVE 2

Alternative 2 routes flow southwest on SR 18 then northwest to the S. 277th Interceptor. The service area of the existing Soos Creek WSD Lift Station 10 is reduced to avoid collecting flow in excess of current capacity. This alternative can eliminate several local pump stations which now pump flow to S 256th Street. More detailed studies should investigate alignments to route flow southwest from S 256th Street sewers to the S. 277th Interceptor and northwest from SR 18 through side streets and easements to reduce the length of proposed routes.

The preliminary planning level construction cost estimate for the Alternative 2 is approximately $75.7 million to construct approximately 91,400 linear feet of 12 to 42 inch diameter gravity sewer and four pump stations. The preliminary estimated construction cost is the highest cost alternative and is $11.3 million more than the lowest cost alternative. Unlike Alternative 1, it does not depend on the continued operation of many local pump stations to convey flow north to S 256th Street.

Inflow and infiltration reduction would reduce cost by reducing both pipe diameters and length. A 20 percent I/I reduction, achieved either through rehabilitation and/or enforcement of stringent new construction standards, could reduce the cost of parallel conveyance improvements by about $7.8 million. Cost to achieve the I/I reduction has not been determined.

Operation and maintenance would be required for four new pump stations, one existing pump station, and 91,400 linear feet of sewer. This alternative proposes regionalizing, without increasing capacity, the existing Soos Creek WSD Lift Station 10. However, the district proposed replacement (Lift Station 10B) may be required if County Facilities are not completed

soon enough to divert flow away form LS 10. District flow projections indicate that LS10 capacity may be exceeded by 2002 while county projections suggest exceedance may occur sooner. If King County chooses to construct the replacement, it needs not be sized as proposed under Alternative 1 (Pump Station C with peak capacity of 31 mgd) but as required to manage flows until flow can be diverted to the new pump Station D. The alternative eliminates several local pump stations south of S 256th Street which could eventually be regionalized under Alternative 1. It proposes the fewer linear feet of pipe than any other alternative.

Constructability constraints and issues for Alternatives 2, 3, and 4 will be very similar. Pipeline alignments generally pass less populated areas. Substantial length follows SR18 right-of-way and could encounter difficult conditions at grade separations. New pump stations will require property and various sites may have unique development requirements.

Each pump station and related force main could be implemented as a separate project. Gravity sewers could be implemented as separate projects. For Alternative 2 construction would proceed from the S. 277th Interceptor upstream to PS "B", then to PS "D", and then to the intersection near point "E". As the sewers are completed between PS "B" and Point "E" flow could be diverted from Soos Creek WSD Lift Station 10. Once the proposed gravity sewers arrive at point "E", Soos Creek WSD Lift Station 11 could be eliminated. From point "E" projects to PS "H" and PS "F" could be built simultaneously. Soos Creek WSD Lift Station 15B would continue to pump to Lift Station 10 until the gravity portion of that alignment was completed. Then the existing force main would be diverted to the new gravity sewer and the parallel force main and pump station would be constructed.

ALTERNATIVE 3

Alternative 3 routes flow southwest and northeast on SR 18 then northwest to the S. 277th Interceptor. The service area of the existing Soos Creek WSD Lift Station 10 is reduced to avoid collecting flow in excess of current capacity. This alternative eliminates several local pump stations which now pump flow to S 256th Street. More detailed studies should investigate alignments to route flow southwest from S 256th Street sewers to the S. 277th Interceptor and northwest from SR 18 through side streets and easements to reduce the length of proposed routes.

The preliminary planning level construction cost estimate for the Alternative 3 is approximately $70.3million to construct approximately 98,600 linear feet of 12 to 42 inch diameter gravity sewer and four pump stations. The preliminary planning level estimated construction cost is $5.4 million less than the highest cost alternative but $5.9 million more than the lowest. Unlike Alternative 1, it does not depend on the continued operation of many local pump stations to convey flow north to S 256th Street.

Inflow and infiltration reduction would reduce cost by reducing both pipe diameters and length. A 20 percent I/I reduction, achieved either through rehabilitation and/or enforcement of stringent new construction standards, could reduce the cost of parallel conveyance improvements by about $4.8 million. Cost to achieve the I/I reduction has not been determined.

Operation and maintenance would be required for four new pump stations, one existing pump station, and 98,000 linear feet of sewer. This alternative proposes regionalizing, without increasing capacity, the existing Soos Creek WSD Lift Station 10. However, the District proposed replacement (Fift Station 10B) may be required if County Facilities are not completed soon enough to divert flow away from LS 10. District flow projections indicate that LS10 capacity may be exceeded by 2002 while county projections suggest exceedance may occur sooner. If King County chooses to construct the replacement, it needs not be sized as proposed under Alternative 1 (Pump Station C with peak capacity of 31 mgd) but as required to manage flows until flow can be diverted to the new Pump Station D. The alternative eliminates several local pump stations south of S 256th Street which could eventually be regionalized under Alternative 1. It proposes approximately 7,200 linear feet more pipe than the lowest alternative and less than the highest.

Constructability constraints and issues for Alternatives 2, 3, and 4 will be very similar. Substantial length follows SR18 right-of-way and could encounter difficult conditions at grade separations. New pump stations will require property and various sites may have unique development requirements

Each pump station and related force main could be implemented as a separate project. Gravity sewers could be implemented as separate projects. For Alternative 3 construction would proceed from the S. 277th Interceptor upstream to PS "D" and then to the intersection near point "E". The section from PS "B" to PS "D" could be delayed if population growth is slower than expected. As the sewers are completed between PS "D" and Point "E" flow could be diverted from Soos Creek WSD Lift Station 10. Once the proposed gravity sewers arrive at point "E", Soos Creek WSD Lift Station 11 could be eliminated. From point "E" projects to PS "H" and PS "F" could be built simultaneously. Soos Creek WSD Lift Station 15B would continue to pump to Lift Station 10 until the gravity portion of that alignment was completed. Then the existing force main would be diverted to the new gravity sewer and the parallel force main and pump station would be constructed.

ALTERNATIVE 4

Alternative 4 routes flow southwest on SR 18 then northwest to the S. 277th Interceptor from two locations. The service area of the existing Soos Creek WSD Lift Station 10 is reduced to avoid collecting flow in excess of current capacity. This alternative eliminates several local pump stations which now pump flow to S 256th Street. More detailed studies should investigate alignments to route flow southwest from S 256th Street sewers to the S. 277th Interceptor and northwest from SR 18 through side streets and easements to reduce the length of proposed routes.

The preliminary planning level construction cost estimate for the Alternative 4 is approximately $72 million to construct approximately 106,500 linear feet of 12 to 42 inch diameter gravity sewer and four pump stations. The preliminary estimated construction cost is $3.7 million less than the highest cost alternative but $7.6 million more than the lowest. Unlike Alternative 1, it does not depend on the continued operation of many local pump stations to convey flow north to S 256th Street.

Inflow and infiltration reduction would reduce cost by reducing both pipe diameters and length. A 20 percent I/I reduction, achieved either through rehabilitation and/or enforcement of stringent new construction standards, could reduce the cost of parallel conveyance improvements by about $6.2 million. Cost to achieve the I/I reduction has not been determined.

Operation and maintenance would be required for four new pump stations, one existing pump station, and 106,500 linear feet of sewer. This alternative proposes regionalizing, without increasing capacity, the existing Soos Creek WSD Lift Station 10. District flow projections indicate that LS10 capacity may be exceeded by 2002 while county projections suggest exceedance may occur sooner. If King County chooses to construct the replacement, it needs not be sized as proposed under Alternative 1 (Pump Station C with peak capacity of 31 mgd) but as required to manage flows until flow can be diverted to the new Pump Station D. The alternative eliminates several local pump stations south of S 256th Street which could eventually be regionalized under Alternative 1. It proposes approximately 15,100 linear feet more pipe than the lowest alternative.

Constructability constraints and issues for Alternatives 2, 3, and 4 will be very similar. Substantial length follows SR18 right-of-way and could encounter difficult conditions at grade separations. New pump stations will require property and various sites may have unique development requirements

Each pump station and related force main could be implemented as a separate project. Gravity sewers could be implemented as separate projects. For Alternative 4 construction would proceed from the upstream to PS "D" and then to the intersection near point "E". As the sewers are completed between PS "D" and Point "E" flow could be diverted from Soos Creek WSD Lift Station 10. Once the proposed gravity sewers arrive at point "E", Soos Creek WSD Lift Station 11 could be eliminated. From point "E" projects to PS "H" and PS "F" could be built simultaneously. Soos Creek WSD Lift Station 15B would continue to pump to Lift Station 10 until the gravity portion of that alignment was completed. Then the existing force main would be diverted to the new gravity sewer and the parallel force main and pump station would be constructed. The section from the S. 277th Interceptor to PS "B" could be delayed if population growth is slower than expected.

LIFE CYCLE COST COMPARISON OF ALTERNATIVES

The Soos Planning Zone alternatives achieve their required hydraulic capacity objectives by different means that create variations in their comparative advantages and disadvantages. A direct comparison of capital cost alone does not completely describe these differences. Although alternatives 2, 3, and 4 are generally similar they are a substantially different in terms of meeting the 1958 service objective of gravity service than alternative 1. The more notable differences include the following:

1. Alternative 1 provides less opportunity to eliminate local pump stations.

2. Alternative 1 requires construction of more new regional pump stations unless Lift Station 10B is constructed.

3. More alternative 1 pump stations are associated with force mains likely to require sulfide control (i.e. chemical feed systems built into the pump station).

4. Alternative 1 provides direct gravity service to the least total acreage in the Soos Planning Zone.

In order to provide a more complete comparison of alternatives, Table 250-4 provides a summary of specific factors including an estimate of apparent life cycle cost by considering both realized and deferred future operating cost.

Table 250-4. Comparison of Soos Planning Zone Alternatives

Characteristic	Alternative 1	2	3	4
Number of Regional PSs	6	6	6	6
Required New PSs	5	4	4	4
PSs with Capacity Exceeding 20mgd	1	2	1	1
PSs with Chemical Add'n to Control Sulfide [f]	3	1	1	2
KC Gravity Served Acreage	11620	13250	13250	13250
Local Responsibility Acreage	7620	5980	5980	5980
Local PS Reductions	1	6	6	6
Project Cost w/o local facilities	$96M[a]	$115M[b]	$106M[b]	$109M[b]
Project Cost w/ local facilities [c]	$110M[a]	$127M[b]	$114M[b]	$117M[b]
Present Worth [d] incl local facilities	$117M	$134M	$121M	$124M
PW of reduced PS O&M [e]	[$0.5M]	[$3M]	[$3M]	[$3M]
Apparent Life Cycle Cost	$116.5M	$131M	$118M	$121M

[a] - Planning level estimate developed in Task 250.
[b] - Cost updated to include preliminary design of conveyance from E to D.
[c] - Cost for regionalizing facilities assumed to be 50% of new capital cost for pipelines and 75% for pump stations.
[d] - Assumes 30-year period, no replacement cost, no salvage value, 6% discount rate, 3% inflation rate
[e] - Assumes 20-year period to allow 10 years for system changes to eliminate local pump stations.
[f] - Force mains with detention greater than 70 minutes at ADF
(1999 dollars)

WORKING ALTERNATIVES

The working alternative for providing regional system conveyance capacity to the MC/GR Subregional Planning Area has been developed to maximize service by gravity while retaining flexibility to respond to and accommodate future growth and development patterns. Maximizing service by gravity should maximize long-term benefits to both King County and local wastewater collection agencies as well as optimize capital and long-term operating costs.

The working alternative is developed from the re-route alternative in the Kent and Auburn Planning Zones. The primary feature of this alternative is the proposed new Southwest Interceptor. Several smaller conveyance system additions are required to fully manage future flow within these planning zones. The current flow projections indicate the working alternative must be implemented and functional by year 2010. Additional project detail is presented in the Task 250 Report Supplement – Kent and Auburn.

The working alternative is developed from Alternative 3 in the Soos Planning Zone. This alternative is very similar to the competing Alternative 1 but most closely resembles the level of service developed in the 1958 Plan and provides more flexibility to manage growth that has trended from the northern part of the planning to the south over many years. The current flow projections indicate the working alternative must be implemented and functional by year 2010. However, the District's Lift Station 10 capacity must be expanded prior to that time to avoid overflows during intense storm events unless flow can be diverted to PS D by about year 2006. The proposed LS 10 replacement will need to be constructed to provide capacity until the working alternative improvements are in service to divert flow to PS D. The replacement station need not be as large as either the District ultimate size projection (19 mgd) or the County projection (21 mgd in year 2010) unless upstream conveyance system improvements or additions are completed that can deliver higher flows than the current system. The replacement pump station (PS C) may need a capacity 12 mgd which should only be required for 2 to 4 years after which time peak flow would be reduced to 6 mgd or less. Additional project detail is presented in the Task 250 Report Supplement – Soos.

CITY OF ENUMCLAW SERVICE REQUIREMENTS

In 1970, Seattle Metro studied the prospect of extending wastewater service to the city of Enumclaw and surrounding area. That extension included a gravity conveyance from Enumclaw to the Green River basin following a route along Newaukum Creek. The study at that time concluded that it would not be cost effective to extend a Metro trunk sewer to the city within the study period and suggested that the city upgrade it's existing treatment plant.

In response to a recent request for information from the City of Enumclaw, an evaluation was made to determine the impact of flow from the city on the proposed south Green River service plan. Flow projections in the City's General Sewer Plan dated July, 1998 showed a peak wet weather, year 2020 flow of 8.2 mgd. The impact evaluation considered this flow would enter the proposed Stuck River Trunk (a diversion of flows entering the existing King County M Street Trunk). No assessment was made to determine conveyance requirements from Enumclaw to the M Street Trunk. It was assumed for purposes of this evaluation that the flow is adequately conveyed to the County's existing trunk sewer.

The City's flow projection was not validated by examination of population forecasting or wet weather calibration methodologies in this current evaluation. Also, no assessment was made of the potential for flow increases beyond year 2020 and no effort was made to attenuate or adjust peak flow to real time at the point of entry to the county system.

An additional 8.2 mgd in the Stuck River Trunk and Southwest Interceptor will generally cause pipe sizes to increase by one nominal increment, i.e., 72-inch diameter sections will increase to 78-inch diameter, etc. A slight change in grade may also be required to avoid raising the hydraulic grade line above upstream constraints. By direct comparison of only those impacted sections, the estimated project cost of the proposed re-routing alternative will increase about $7.9 million to accommodate the additional 8.2 mgd.

Figure 250-5 shows the impacted sections and Table 250-5 shows the comparative project cost of the impacted sections. At the time of project pre-design, final sizing of the Southwest Interceptor and Stuck River Trunk must consider the possibility of extending service to Enumclaw. Full consideration of Enumclaw service planning must also include current flow projections and conveyance requirements from the city to existing or proposed county facilities. Assumptions and cost detail fro each project construction cost estimates are itemized in the Task 250 Report Supplement – Kent and Auburn appendices

Table 250-5. Final Planning Level Estimated Construction Costs for Sections of the Stuck River Trunk and Southwest Interceptor Working Alternative Conveying Flow from Enumclaw

Item	Average Depth (ft)	Quantity	Construction Cost	Total Project Cost
Auburn Planning Zone				
Pipeline (Open Cut Construction)				
Without Enumclaw Flow				
30 inch	18	4,700	$2,992,068	
36 inch	17	7,700	$6,149,047	
54 inch	16	11,000	$12,427,409	
With Enumclaw Flow				
42 inch	18	4,700	$3,707,637	
42 inch	17	7,700	$6,672,853	
60 inch	16	11,000	$14,159,136	
Cost Impact of Enumclaw Flow			**$2,971,102**	**$4,456,653**
Kent Planning Zone				
Pipeline (Open Cut Construction)				
Without Enumclaw Flow				
72 inch	20	2,000	$3,388,583	
78 inch	18	9,400	$16,496,665	
With Enumclaw Flow				
78 inch	20	2,000	$3,699,900	
84 inch	18	9,400	$18,454,335	
Cost Impact of Enumclaw Flow			**$2,268,987**	**$3,403,480**
Total Cost Impact of Enumclaw Flow			**$5,240,000**	**$7,860,000**

[a] Cost estimate based on King County CSI cost model (version 0.6.2) and budget model. (2001 dollars)

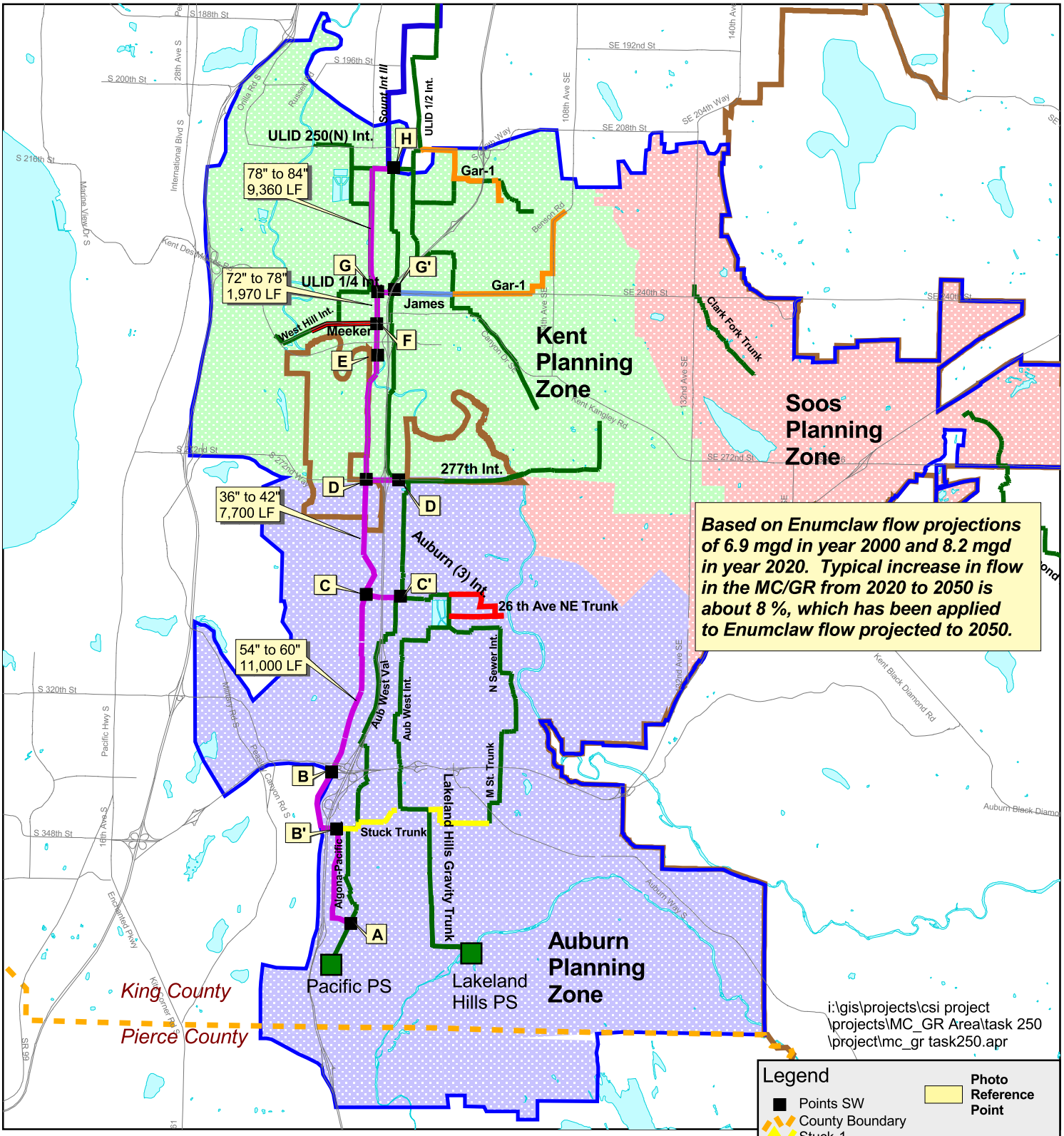

Figure 250 - 5: Southwest Interceptor Working Alternative revised to include estimated flow from Enumclaw Mill Creek / Green River Subregional Planning Area

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KING COUNTY

PROJECT IMPLEMENTATION

This section identifies proposed project components and costs within each planning zone although final configuration into project status will be dependent on final implementation strategies. Alternative contracting approaches is discussed in the section to consider possible alternative project delivery systems. Nearly all work is required to be completed and functional by year 2010. This means all projects could be designed and constructed concurrently however, a sequence is suggested and project schedules presented for spreading cash flow requirement over the remaining time available.

FINAL PLANNING LEVEL ESTIMATED COSTS

Construction and Project cost estimates were prepared using the CSI Cost Model (version 0.6.2) and King County budget model and are presented in Table 250-6. Assumptions and cost detail for each project construction cost estimates are itemized in Task 250 Report Supplement appendices.

Table 250-6. Final Preliminary Planning Level Construction and Project Cost Estimates

Planning Zone	Project	Construction Cost (million dollars)	Project Cost (million dollars)
Auburn			
	26th Street Trunk	$2,077,000	$4,413,823
	Stuck River Trunk	$8,945,000	$19,192,839
	Southwest Interceptor	$32,795,000	$66,955,912
Kent			
	Garrison Creek Relief Trunk	$12,546,000	$26,919,325
	James Trunk	$4,626,000	$9,925,777
	Meeker Trunk	$2,617,000	$5,615,166
	Southwest Interceptor	$41,657,000	$85,049,014
Soos			
	Gravity Sewers	$32,957,000	$67,286,659
	Forcemain B	$2,172,000	$4,660,352
	Forcemain D	$11,879,000	$25,179,322
	Forcemain F	$3,346,000	$7,092,349
	Forcemain H	$270,000	$579,326
	PS B	$2,092,000	$4,488,700
	PS C Early Implementation	$5,000,000	$10,728,250
	PS D	$9,635,000	$20,673,338
	PS F	$5,211,000	$11,045,496
	PS H	$3,191,000	$6,763,803
	Total Project Cost (million dollars)	**$181,016,000**	**$376,569,450**

(2001 dollars)

ALTERNATIVE PROJECT DELIVERY SYSTEMS

King County has most commonly implemented projects through the traditional means of design consultants and construction contractors. In 1999, the county examined a number of alternatives featuring various forms of partnership of the county with construction contractors. More recently several specific county pump station / pipeline projects were evaluated for their suitability for implementation through a design/build process.

Alternative delivery systems may present a potential for reducing the time to bring new facilities on-line and to reduce overall project cost. These benefits are expected to be derived from improved implementation efficiencies and by re-assignment of project risks in a way that will reduce disputes. The County pump station / pipeline studies concluded that the overall project schedule could be reduced by as much as 20%. However, the study also concluded that a number of critical decisions and actions were required in order for the county to adopt a design/build approach. One of the more critical decisions on which realization of design/build benefits would depend is the extent to which the county retains control over or participates in specific design decisions. Cost reduction was not specifically evaluated in the study.

The earlier study did produce several conclusions that may be considered in the context of planning projects required for upgrading capacity to serve the MC/GR area. First, pump station projects on known sites probably present less risk than pipeline projects. Conversely, if more specific detail can be developed prior to selecting the design/build contractor there should be less risk. As greater constraints, such as design specifics, are placed on the design/builder the potential to realize benefits such as cost and timesaving may be reduced.

Table 250-7 presents project packaging options and a comparison of design-build and traditional delivery considerations for each of the various projects throughout the planning area. Possible consequences of aggregating multiple projects into larger projects for implementation are also described. Due to uncertainty in how a design/build approach may be implemented it is not possible to predict either specific time or cost saving at this level of planning.

Table 250-7. Conveyance Projects Packaging Summary

Project Name, Description, Location; Project Cost.	Optional Project Packaging	Design, Construction and Implementation Considerations
Southwest Interceptor ▪ 58,302 feet of GS interceptor ▪ Kent / Auburn Planning Zones ▪ $70.0 M Project Cost	▪ One project ▪ Divide into two by jurisdictions (Auburn section and Kent section) ▪ Combine with other associated smaller projects	▪ Aggregating projects may produce economy of scale but may also limit potential bidders. Smaller projects may encourage greater competition from local contractors to bid and perform work. Greater number of projects underway concurrently may shorten overall schedule. Price/cost competition, permitting and schedule may be optimized by dividing the project into two sections – by jurisdiction – one in Auburn and one in Kent. DB approach may offer less benefit on pipeline work due greater risk of unforeseen conditions.
Meeker Trunk ▪ 4,379 LF of GS ▪ Kent Planning Zone ▪ $5.6M Project Cost	▪ One project ▪ Combine with Southwest Interceptor	▪ Separate project will favor bidding of local contractors. Overall schedule may benefit from multiple contracts underway concurrently. DB approach may offer less benefit on pipeline work due greater risk of unforeseen conditions.
James Trunk ▪ 4,100 LF of GS ▪ Kent Planning Zone ▪ $9.9 M Project Cost	▪ One project ▪ Combine with Southwest Interceptor	▪ Separate project will favor bidding of local contractors. Overall schedule may benefit from multiple contracts underway concurrently. DB approach may offer less benefit on pipeline work due greater risk of unforeseen conditions.
Garrison Creek Relief Trunk ▪ 21,000 LF of GS ▪ Kent Planning Zone ▪ $26.9 M Project Cost	▪ One project ▪ Combine with Southwest Interceptor	▪ Separate project will favor bidding of local contractors. Overall schedule may benefit from multiple contracts underway concurrently. DB approach may offer less benefit on pipeline work due greater risk of unforeseen conditions.
26th Street Trunk ▪ 4,900 LF of GS ▪ Auburn Planning Zone ▪ $4.4M Project Cost	▪ One project	▪ Small, isolated project does not readily combine with other projects. Should keep separate. DB approach may offer less benefit on pipeline work due greater risk of unforeseen conditions.
Stuck River Trunk ▪ 10,332 LF of GS ▪ Auburn Planning Zone ▪ $19.1M Project Cost	▪ One project ▪ Combine with Southwest Interceptor	▪ Separate project will favor bidding of local contractors. Overall schedule may benefit from multiple contracts underway concurrently. DB approach may offer less benefit on pipeline work due greater risk of unforeseen conditions.

Table 250-7. Conveyance Projects Packaging Summary (continued)

Project Name, Description, Location; Project Cost.	Optional Project Packaging	Design, Construction and Implementation Considerations
Pump Station B ▪ 3.2 mgd ▪ Soos Planning Zone ▪ $4.5M Project Cost	▪ One Project ▪ Combine with other Pump Stations and/or Force Mains	▪ Pump Station projects may offer greatest potential for DB benefit depending on KC decision on design participation. Risk related to unforeseen conditions can be minimized. Pump station design must be completed in association with force main design. Pump station and pipeline construction generally attracts different bidders. Economy of scale may improve by combining several pump stations.
Force Main B ▪ 6,300 LF of 15” ▪ Soos Planning Zone ▪ $4.7M Project Cost	▪ One Project ▪ Combine with PS B ▪ Combine with other Pump Stations and/or Force Mains	▪ Force main design must be coordinated with pump station design. Pipeline constructors may not include mechanical/electrical disciplines associated with pump station constructors. DB approach may offer less benefit on pipeline work due greater risk of unforeseen conditions.
Pump Station C ▪ 12 mgd ▪ Soos Planning Zone ▪ $10.7M Project Cost	▪ One Project	▪ Project is replacement of District LS 10 to provide capacity until other conveyance is completed in year 2010. Urgency of this project may preclude DB approach.
Pump Station D ▪ 28.9 mgd ▪ Soos Planning Zone ▪ $20.7M Project Cost	▪ One Project ▪ Combine with other Pump Stations and/or Force Mains	▪ Pump Station projects may offer greatest potential for DB benefit depending on KC decision on design participation. Risk related to unforeseen conditions can be minimized. Pump station design must be completed in association with force main design. Pump station and pipeline construction generally attracts different bidders. Economy of scale may improve by combining several pump stations.
Force Main D ▪ 19,000 LF of 36” ▪ Soos Planning Zone ▪ $25.2M Project Cost	▪ One Project ▪ Combine with PS D ▪ Combine with other Pump Stations and/or Force Mains	▪ Force main design must be coordinated with pump station design. Pipeline constructors may not include mechanical/electrical disciplines associated with pump station constructors. DB approach may offer less benefit on pipeline work due greater risk of unforeseen conditions.
Pump Station F ▪ 12.3 mgd ▪ Soos Planning Zone ▪ $11.0M Project Cost	▪ One Project ▪ Combine with other Pump Stations and/or Force Mains	▪ Pump Station projects may offer greatest potential for DB benefit depending on KC decision on design participation. Risk related to unforeseen conditions can be minimized. Pump station design must be completed in association with force main design. Pump station and pipeline construction generally attracts different bidders. Economy of scale may improve by combining several pump stations.

Table 250-7. Conveyance Projects Packaging Summary (continued)

Project Name, Description, Location; Project Cost.	Optional Project Packaging	Design, Construction and Implementation Considerations
Force Main F ▪ 7,500 LF of 15” ▪ Soos Planning Zone ▪ $7.1M Project Cost	▪ One Project ▪ Combine with PS F ▪ Combine with other Pump Stations and/or Force Mains	▪ Force main design must be coordinated with pump station design. Pipeline constructors may not include mechanical/electrical disciplines associated with pump station constructors. DB approach may offer less benefit on pipeline work due greater risk of unforeseen conditions.
Pump Station H ▪ 5.3 mgd ▪ Soos Planning Zone ▪ $6.8M Project Cost	▪ One Project ▪ Combine with other Pump Stations and/or Force Mains	▪ Pump Station projects may offer greatest potential for DB benefit depending on KC decision on design participation. Risk related to unforeseen conditions can be minimized. Pump station design must be completed in association with force main design. Pump station and pipeline construction generally attracts different bidders. Economy of scale may improve by combining several pump stations.
Force Main H ▪ 1,000 LF of 12” ▪ Soos Planning Zone ▪ $0.6M Project Cost	▪ One Project ▪ Combine with PS H ▪ Combine with other Pump Stations and/or Force Mains	▪ Force main design must be coordinated with pump station design. Pipeline constructors may not include mechanical/electrical disciplines associated with pump station constructors. DB approach may offer less benefit on pipeline work due greater risk of unforeseen conditions.
Gravity Sewer ▪ 4,300 LF of 12” GS ▪ 32,758 LF of 21” GS ▪ 11,000 LF of 27” GS ▪ 6,700 LF of 30” GS ▪ 10,000 LF of 42” GS ▪ Soos Planning Zone ▪ $67.3M Project Cost	▪ One project ▪ Combine with other gravity sewer projects	▪ Separate project will favor bidding of local contractors. Overall schedule may benefit from multiple contracts underway concurrently. Could combine multiple sections as common trade work. DB approach may offer less benefit on pipeline work due greater risk of unforeseen conditions.

FM = Force main
GS = Gravity sewer
DB = Design Build
M = Million
MGD = Million gallons per day
Cost estimates based on King County CSI cost model (version 0.6.2) and budget model.

PROJECT SEQUENCING

Figure 250-6 illustrates the proposed projects. Figure 250-7 shows an initial schedule of projects over the next decade. With the exception of the "26th Street Trunk" and the project parallel to the Auburn Interceptor Section 3, the above projects are required to be in service by 2010 based on the current flow projections. It is possible that growth and development actually realized in Black Diamond and in the South Soos area do not create the need for increased capacity by 2010. The Auburn Interceptor Section 3 capacity is adequate until 2020. The Southwest Interceptor would require an alignment variance to include section 3 that may not be the preferred alignment from a long term or cost view. Lift Station 10, owned by Soos Creek Water and Sewer District, must be replaced with greater capacity or the flow diversion to PSD completed as soon as possible.

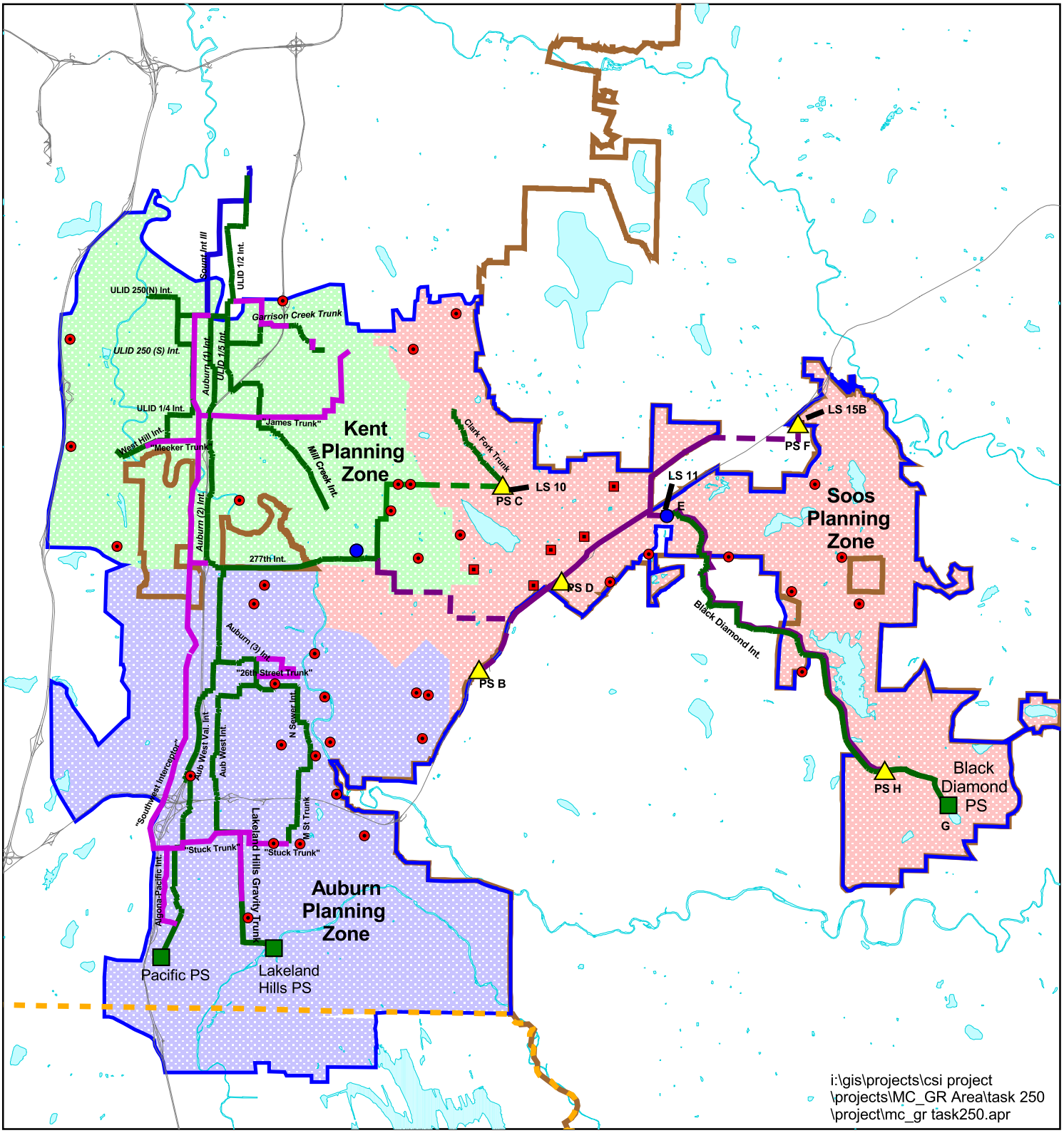

Figure 250 - 6: Proposed Projects

Mill Creek / Green River Subregional Planning Area

Legend

- Proposed Sewers
- MC/GR Sewerlines
- Sewers in Soos Planning Zone alt3
- Proposed Gravity
- Proposed Forcemain
- Existing Local Gravity
- Existing Local Forcemain
- MC/GR Boundary
- South Interceptor III
- Urban Growth Line 2000

MC/GR Planning Zones
- Auburn Planning Zone
- Kent Planning Zone
- Soos Planning Zone

- County Boundary

Soos Planning Pump Stations
- Reference Point
- Proposed Regional PS
- Existing Local PS

MC/GR Local Pump Stations
- Local PS Continues
- Local PS Eliminated
- MC/GR King Co Pump Stations

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KING COUNTY

0.5 0 0.5 1 1.5 2 2.5 Miles

N W E S

June 15, 2001

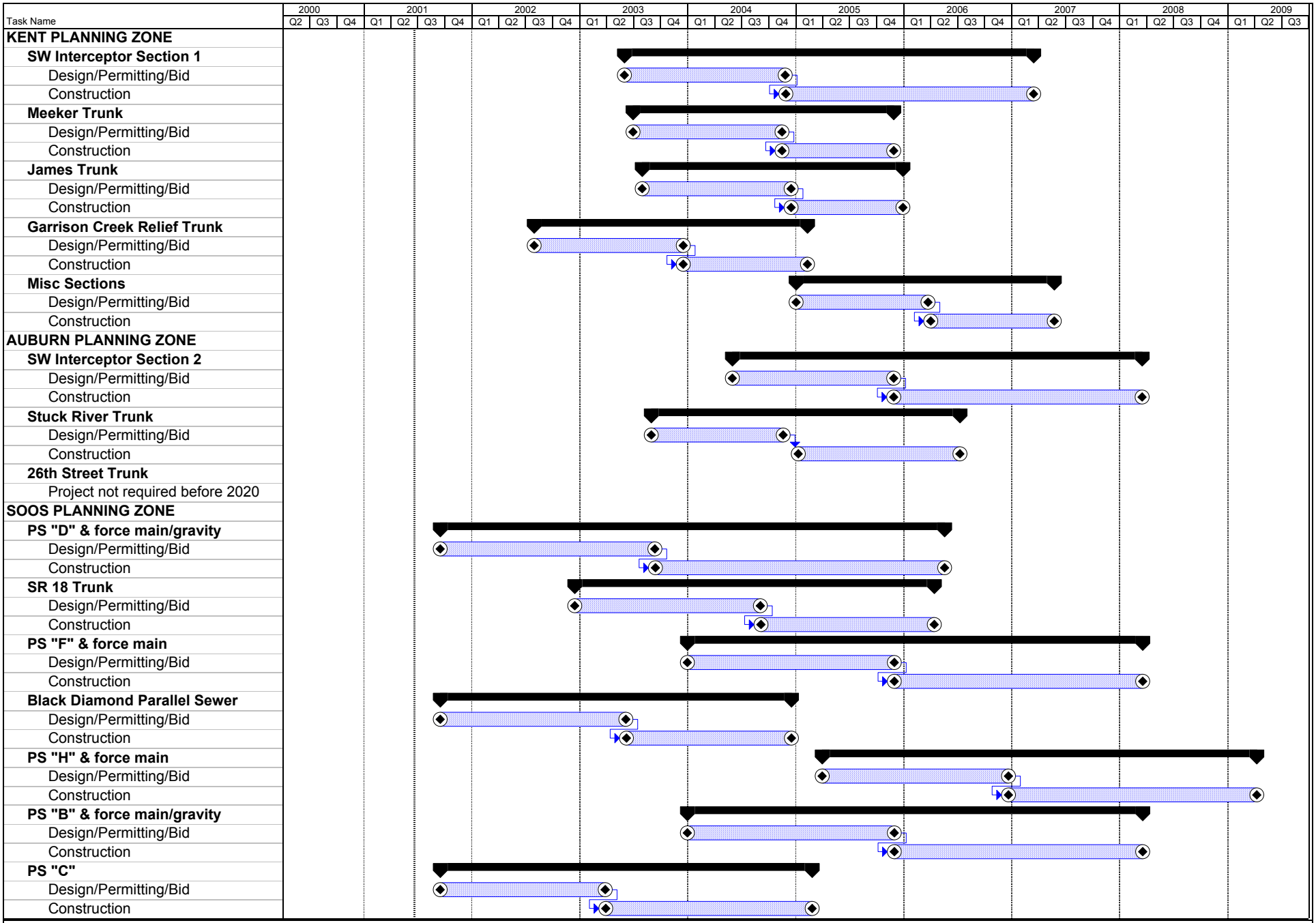

Figure 250-7. MC/GR Project Implementation Schedule.

APPENDIX 250-A

AUBURN PLANNING ZONE PARALLEL ALTERNATIVE FLOW ROUTING WITH I/I HELD TO 1,100 GPAD ON NEW CONSTRUCTION

Task 250 Report:
AUBURN PLANNING ZONE - PARALLEL ALTERNATIVE
I&I LIMITED TO 1,100 GPAD ON NEW CONSTRUCTION

Facility	Up-stream MH #	Down-stream MH #	Dia. (in.)	Manning n	Up-stream Inv Elev	Down-stream Inv Elev	Length (ft)	Slope (ft/ft)	Vfull (fps)	Cap. (mgd)	Herrera Proposed Slope	Modification Origin of Flow Percent	2010 Design Flow Inflow (mgd)	2010 Design Flow Total (mgd)	2020 Design Flow Inflow (mgd)	2020 Design Flow Total (mgd)	2030 Design Flow Inflow (mgd)	2030 Design Flow Total (mgd)	2050 Design Flow Inflow (mgd)	2050 Design Flow Total (mgd)	Excess (mgd)	Parallel Pipe (in.)	Decade Exceeded	Surcharge: any negative value in "BW elev" Δ elev FULL pipe	Δ elev	Δ−Δfull	BW elev (ft)	Proposed Diameter (inches)
do not delete this line																												
												10% al-x	0.34	0.34	0.36	0.36	0.38	0.38	0.38	0.38			X					
RE*ALPAC FORCEMAIN	PS 2	238	12	0.013	144.50	165.60	2940					100% pac-a	2.31	2.65	2.64	3.00	2.79	3.16	2.81	3.19			2010					
RE*ALPAC	238	237	21	0.013	165.60	165.30	400	0.0007	1.81	2.8	0.0012	100% pac-x	2.54	5.19	2.88	5.88	3.06	6.22	3.15	6.34	3.54	21	2010					
RE*ALPAC	237	230	21	0.013	165.30	164.90	401	0.0010	2.09	3.2	0.0012	0%		5.19		5.88		6.22		6.34	3.10	21	2010					
RE*ALPAC	230	229	21	0.013	164.90	164.70	135	0.0015	2.54	3.9	0.0012	10% al-x	0.34	5.53	0.36	6.24	0.38	6.60	0.38	6.72	2.77	21	2010					
RE*ALPAC	229	228	21	0.013	164.70	164.40	275	0.0011	2.18	3.4	0.0012	0%		5.53		6.24		6.60		6.72	3.34	21	2010					
RE*ALPAC	228	251	21	0.013	164.40	163.90	241	0.0021	3.01	4.7	0.0012	0%		5.53		6.24		6.60		6.72	2.05	18	2010					
RE*ALPAC	251	252	21	0.013	163.90	163.60	366	0.0008		2.9	0.0012	0%		5.53		6.24		6.60		6.72	3.79	24	2010					
RE*ALPAC	252	253	21	0.013	163.60	163.20	328	0.0012	2.31	3.6	0.0012	0%		5.53		6.24		6.60		6.72	3.14	21	2010					
RE*ALPAC	253	254	21	0.013	163.20	162.90	165	0.0018	2.81	4.4	0.0012	0%		5.53		6.24		6.60		6.72	2.35	18	2010					
RE*ALPAC	254	256	21	0.013	162.90	162.60	300	0.0010	2.09	3.2	0.0012	0%		5.53		6.24		6.60		6.72	3.48	21	2010					
	Section*		21	0.013		3.00	2611	0.0011	**2.24**	**3.5**	**0.0011**	0%		5.53		6.24		6.60		6.72	3.25	21	2010					21
RE*ALPAC	256	257	24	0.013	162.60	162.50	89	0.0011	2.42	4.9	0.0012	40% al-x	1.35	6.88	1.43	7.67	1.51	8.11	1.52	8.24	3.34	21	2010					
RE*ALPAC	257	258	24	0.013	162.50	162.20	251	0.0012	2.50	5.1	0.0012	0%		6.88		7.67		8.11		8.24	3.19	21	2010					
RE*ALPAC	258	259	24	0.013	162.20	161.90	248	0.0012	2.51	5.1	0.0012	0%		6.88		7.67		8.11		8.24	3.15	21	2010					
RE*ALPAC	259	260	24	0.013	161.90	161.70	241	0.0008	2.08	4.2	0.0012	0%		6.88		7.67		8.11		8.24	4.03	24	2010					
RE*ALPAC	260	261	24	0.013	161.70	161.40	241	0.0012	2.55	5.2	0.0012	0%		6.88		7.67		8.11		8.24	3.08	21	2010					
RE*ALPAC	261	290	24	0.013	161.40	161.20	185	0.0011	2.37	4.8	0.0012	0%		6.88		7.67		8.11		8.24	3.43	21	2010					
RE*ALPAC	290	293	24	0.013	161.20	160.80	421	0.0010	2.22	4.5	0.0012	0%		6.88		7.67		8.11		8.24	3.73	24	2010					
RE*ALPAC	293	304	24	0.013	160.80	160.30	438	0.0011	2.44	4.9	0.0012	0%		6.88		7.67		8.11		8.24	3.30	21	2010					
RE*ALPAC	304	305	24	0.013	160.30	159.90	460	0.0009	2.13	4.3	0.0012	0%		6.88		7.67		8.11		8.24	3.93	24	2010					
RE*ALPAC	305	306	24	0.013	159.90	159.40	440	0.0011	2.44	4.9	0.0012	0%		6.88		7.67		8.11		8.24	3.31	21	2010					
RE*ALPAC	306	307	24	0.013	159.40	159.00	446	0.0009	2.16	4.4	0.0012	0%		6.88		7.67		8.11		8.24	3.86	24	2010					
RE*ALPAC	307	308	24	0.013	159.00	158.60	434	0.0009	2.19	4.4	0.0012	0%		6.88		7.67		8.11		8.24	3.80	24	2010					
RE*ALPAC	308	309	24	0.013	158.60	158.10	441	0.0011	2.43	4.9	0.0012	0%		6.88		7.67		8.11		8.24	3.32	21	2010					
RE*ALPAC	309	309B	24	0.013	158.10	157.80	340	0.0009	2.15	4.3	0.0012	0%		6.88		7.67		8.11		8.24	3.90	24	2010					
RE*ALPAC	309B	R83-17	24	0.013	157.80	157.20	345	0.0017	3.01	6.1	0.0012	40% al-x	1.35	8.22	1.43	9.11	1.51	9.62	1.52	9.77	3.66	24	2010					
	Section*		24	0.013		5.40	5020	0.0011	**2.37**	**4.8**	**0.0011**	0%		8.22		9.11		9.62		9.77	4.97	27	2010					27
RE*AUBWVAL	R83-17	R83-16	24	0.013	157.20	156.40	437	0.0018	3.09	6.3	0.0012	0%		8.22		9.11		9.62		9.77	3.50	21	2010					
RE*AUBWVAL	R83-16	R83-15	24	0.013	156.40	156.00	39	0.0103	7.31	14.8	0.0012	0%		8.22		9.11		9.62		9.77	-5.05	OK	NE					
RE*AUBWVAL	R83-15	R83-14	24	0.013	156.00	154.80	367	0.0033	4.13	8.4	0.0012	0%		8.22		9.11		9.62		9.77	1.40	15	2020					
RE*AUBWVAL	R83-14	R83-13	24	0.013	154.80	154.00	369	0.0022	3.36	6.8	0.0012	0%		8.22		9.11		9.62		9.77	2.95	21	2010					
RE*AUBWVAL	R83-13	R83-12	24	0.013	154.00	153.60	408	0.0010	2.26	4.6	0.0012	0%		8.22		9.11		9.62		9.77	5.19	27	2010					
RE*AUBWVAL	R83-12	R83-11	24	0.013	153.60	153.30	371	0.0008	2.05	4.2	0.0012	0%		8.22		9.11		9.62		9.77	5.61	27	2010					
RE*AUBWVAL	R83-11	R83-10	24	0.013	153.30	153.10	339	0.0006	1.75	3.6	0.0012	0%		8.22		9.11		9.62		9.77	6.21	27	2010					
RE*AUBWVAL	R83-10	R83-09	24	0.013	153.10	153.00	270	0.0004	1.39	2.8	0.0012	0%		8.22		9.11		9.62		9.77	6.95	27	2010					
RE*AUBWVAL	R83-09	R83-08	24	0.013	153.00	152.50	221	0.0023	3.43	7.0	0.0012	0%		8.22		9.11		9.62		9.77	2.81	21	2010					
RE*AUBWVAL	R83-08	R83-07	24	0.013	152.50	152.10	467	0.0009	2.11	4.3	0.0012	0%		8.22		9.11		9.62		9.77	5.48	27	2010					
RE*AUBWVAL	R83-07	R83-06	24	0.013	152.10	151.80	380	0.0008	2.03	4.1	0.0012	0%		8.22		9.11		9.62		9.77	5.66	27	2010					
RE*AUBWVAL	R83-06	R83-05	24	0.013	151.80	151.20	538	0.0011	2.41	4.9	0.0012	0%		8.22		9.11		9.62		9.77	4.88	24	2010					
RE*AUBWVAL	R83-05	R83-04	24	0.013	151.20	150.80	475	0.0008	2.09	4.2	0.0012	0%		8.22		9.11		9.62		9.77	5.52	27	2010					
RE*AUBWVAL	R83-04	R83-03	24	0.013	150.80	150.20	480	0.0013	2.55	5.2	0.0012	0%		8.22		9.11		9.62		9.77	4.59	24	2010					
RE*AUBWVAL	R83-03	R83-02	24	0.013	150.20	149.80	482	0.0008	2.08	4.2	0.0012	0%		8.22		9.11		9.62		9.77	5.55	27	2010					
RE*AUBWVAL	R83-02	R83-01	24	0.013	149.80	149.20	235	0.0026	3.65	7.4	0.0012	0%		8.22		9.11		9.62		9.77	2.37	21	2010					
	Section		24	0.013		8.00	5878	0.0014	**2.66**	**5.4**	**0.0014**	0%		8.22		9.11		9.62		9.77	4.37	24	2010					24

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I&I LIMITED TO 1,100 GPAD ON NEW CONSTRUCTION

Facility	Up-stream MH #	Down-stream MH #	Dia. (in.)	Manning n	Up-stream Inv Elev	Down-stream Inv Elev	Length (ft)	Slope (ft/ft)	Vfull (fps)	Cap. (mgd)	Herrera Proposed Slope	Modification Origin of Flow Percent	2010 Design Flow Inflow (mgd)	2010 Design Flow Total (mgd)	2020 Design Flow Inflow (mgd)	2020 Design Flow Total (mgd)	2030 Design Flow Inflow (mgd)	2030 Design Flow Total (mgd)	2050 Design Flow Inflow (mgd)	2050 Design Flow Total (mgd)	Excess (mgd)	Parallel Pipe (in.)	Decade Exceeded	Surcharge: any negative value in "BW elev" Δ elev FULL pipe	Δ elev	Δ−Δfull	BW elev (ft)	Proposed Diameter (inches)
												100% fwne-w	1.51	9.73	2.26	11.37	2.31	11.93	2.34	12.11			X					
WVAL	R83-01*	81-2	36	0.013	149.15	148.95	375	0.0005	2.18	10.0	0.0038	25% aub3-s	0.33	10.07	0.37	11.74	0.39	12.33	0.40	12.51	2.55	15	2010					
WVAL	81-2*	81-1	30	0.013	149.00	148.50	210	0.0024	4.09	12.9	0.0038	0%		10.07		11.74		12.33		12.51	-0.44	OK	NE					
WVAL	81-1*	80-8	42	0.013	148.50	148.42	70	0.0011	3.54	22.0	0.0038	0%		10.07		11.74		12.33		12.51	-9.49	OK	NE					
WVAL x Main St*	80-8*	80-7	42	0.013	148.42	147.60	335	0.0024	5.19	32.2	0.0038	0%		10.07		11.74		12.33		12.51	-19.69	OK	NE					
WVAL	80-7*	80-6	30	0.013	147.60	147.00	167	0.0036	5.02	15.9	0.0038	0%		10.07		11.74		12.33		12.51	-3.39	OK	NE					
WVAL	80-6*	80-5	30	0.013	147.00	146.10	482	0.0019	3.62	11.5	0.0038	25% aub3-s	0.33	10.40	0.37	12.11	0.39	12.72	0.40	12.91	1.44	15	2020					
WVAL	80-5*	80-3	30	0.013	146.10	145.16	510	0.0018	3.60	11.4	0.0038	0%		10.40		12.11		12.72		12.91	1.51	15	2020					
WVAL	80-3*	80-2	30	0.013	145.16	144.50	441	0.0015	3.24	10.3	0.0038	0%		10.40		12.11		12.72		12.91	2.64	18	2010					
WVAL	80-2*	80-1	30	0.013	144.50	143.70	450	0.0018	3.53	11.2	0.0038	0%		10.40		12.11		12.72		12.91	1.72	15	2020					
WVAL	80-1*	79-23	30	0.013	143.70	142.80	447	0.0020	3.76	11.9	0.0038	0%		10.40		12.11		12.72		12.91	1.01	12	2020					
WVAL	79-23*	79-22	30	0.013	142.80	142.25	465	0.0012	2.88	9.1	0.0038	0%		10.40		12.11		12.72		12.91	3.79	18	2010					
WVAL	79-22*	79-21	30	0.013	142.25	141.95	450.4	0.0007	2.16	6.8	0.0038	0%		10.40		12.11		12.72		12.91	6.06	21	2010					
WVAL	79-21*	79-20	30	0.013	141.95	141.70	409.5	0.0006	2.07	6.6	0.0038	0%		10.40		12.11		12.72		12.91	6.35	21	2010					
WVAL	79-20*	79-19	30	0.013	141.70	141.48	363	0.0006	2.06	6.5	0.0038	0%		10.40		12.11		12.72		12.91	6.38	24	2010					
WVAL	79-19*	79-18	30	0.013	141.48	141.26	361.5	0.0006	2.07	6.5	0.0038	0%		10.40		12.11		12.72		12.91	6.36	21	2010					
WVAL	79-18*	79-17	30	0.013	141.26	141.00	425	0.0006	2.07	6.6	0.0038	0%		10.40		12.11		12.72		12.91	6.35	21	2010					
WVAL	79-17*	79-16	42	0.013	140.89	139.87	260	0.0039	6.57	40.8	0.0038	0%		10.40		12.11		12.72		12.91	-27.86	OK	NE					
WVAL	79-16*	79-15X	30	0.013	139.87	139.67	360	0.0006	1.97	6.3	0.0038	0%		10.40		12.11		12.72		12.91	6.66	24	2010					
WVAL	79-15X*	79-15	30	0.013	139.67	139.04	90	0.0070	7.01	22.2	0.0038	0%		10.40		12.11		12.72		12.91	-9.29	OK	NE					
WVAL	79-15*	79-14	30	0.013	139.04	138.15	410	0.0022	3.90	12.4	0.0038	0%		10.40		12.11		12.72		12.91	0.55	9	2030					
WVAL	79-14*	1	30	0.013	138.15	137.92	388.5	0.0006	2.04	6.5	0.0038	0%		10.40		12.11		12.72		12.91	6.45	24	2010					
	Section*		24	0.013		11.23	7469.9	0.0015	**2.80**	**5.7**	**0.0015**	0%		10.40		12.11		12.72		12.91	7.23	27	2010					27
WVAL	1*	79-13	42	0.013	137.92	136.50	380	0.0037	6.41	39.8	0.0038	0%		10.40		12.11		12.72		12.91	-26.88	OK	NE					
WVAL	79-13*	79-12	30	0.013	136.50	136.40	99.7	0.0010	2.65	8.4	0.0038	0%		10.40		12.11		12.72		12.91	4.50	21	2010					
											0.0038	100% fwne-x	1.55	11.94	1.75	13.86	1.84	14.56	1.86	14.77			X					
WVAL	79-12*	79-11	30	0.013	136.40	135.95	483.7	0.0009	2.55	8.1	0.0038	25% aub3-s	0.33	12.27	0.37	14.24	0.39	14.96	0.40	15.17	7.08	24	2010					
WVAL	79-11*	79-10	30	0.013	135.95	135.70	289.2	0.0009	2.46	7.8	0.0038	0%		12.27		14.24		14.96		15.17	7.37	24	2010					
WVAL	79-10*	79-9	30	0.013	135.70	135.41	364	0.0008	2.37	7.5	0.0038	0%		12.27		14.24		14.96		15.17	7.68	24	2010					
WVAL	79-9*	79-8	30	0.013	135.41	135.12	361	0.0008	2.38	7.5	0.0038	0%		12.27		14.24		14.96		15.17	7.64	24	2010					
WVAL	79-8*	79-6	30	0.013	135.12	134.83	362	0.0008	2.37	7.5	0.0038	0%		12.27		14.24		14.96		15.17	7.66	24	2010					
WVAL	79-6*	79-5	30	0.013	134.83	134.50	411	0.0008	2.37	7.5	0.0038	0%		12.27		14.24		14.96		15.17	7.65	24	2010					
WVAL	79-5*	79-4	30	0.013	134.50	134.09	496.3	0.0008	2.41	7.6	0.0038	0%		12.27		14.24		14.96		15.17	7.54	24	2010					
WVAL	3*	79-3	30	0.013	134.09	133.70	490	0.0008	2.36	7.5	0.0038	0%		12.27		14.24		14.96		15.17	7.68	24	2010					
WVAL	79-3*	79-2	30	0.013	133.70	133.42	372.7	0.0008	2.30	7.3	0.0038	25% aub3-s	0.33	12.60	0.37	14.61	0.39	15.35	0.40	15.57	8.30	24	2010					
WVAL	79-2*	79-1	30	0.013	133.42	133.40	38.5	0.0005	1.91	6.0	0.0038	0%		12.60		14.61		15.35		15.57	9.52	27	2010					
WVAL	79-1*	R18H-65	42	0.013	133.40	133.19	12	0.0175	13.87	86.1	0.0038	0%		12.60		14.61		15.35		15.57	-70.53	OK	NE					
	Section*		30	0.013		4.73	4160.1	0.0011	**2.83**	**8.9**	**0.0011**	0%		12.60		14.61		15.35		15.57	6.62	27	2010					27
TO AUBURN3.R18H-65																												

Task 250 Report:
AUBURN PLANNING ZONE - PARALLEL ALTERNATIVE
I&I LIMITED TO 1,100 GPAD ON NEW CONSTRUCTION

Facility	Up-stream MH #	Down-stream MH #	Dia. (in.)	Manning n	Up-stream Inv Elev	Down-stream Inv Elev	Length (ft)	Slope (ft/ft)	Vfull (fps)	Cap. (mgd)	Herrera Proposed Slope	Modification Origin of Flow Percent	2010 Design Flow Inflow (mgd)	2010 Design Flow Total (mgd)	2020 Design Flow Inflow (mgd)	2020 Design Flow Total (mgd)	2030 Design Flow Inflow (mgd)	2030 Design Flow Total (mgd)	2050 Design Flow Inflow (mgd)	2050 Design Flow Total (mgd)	Excess (mgd)	Parallel Pipe (in.)	Decade Exceeded	Surcharge: any negative value in "BW elev" Δ elev FULL pipe	Δ elev	Δ−Δfull	BW elev (ft)	Proposed Diameter (inches)
												100% Ih-pc	0.95	0.95	1.38	1.38	1.44	1.44	1.50	1.50			X					
L. HILLS*			24	0.013	194.74	174.98	7269	0.0017	3.01	6.1	0.0027	100% wr-x	2.37	3.32	3.17	4.55	3.29	4.73	3.34	4.84	-1.27	OK	NE					
REPLACEMENT REQUIRED			27	0.013		19.76	7269	0.0027	**4.07**	**10.4**	**0.0027**	0%		3.32		4.55		4.73		4.84			X					**27**
RE*WINTSEWR	GR27-44	GR27-43	24	0.013	174.98	172.67	329	0.0070	6.05	12.3	0.0030	40% wi-x	4.10	7.41	4.36	8.91	4.60	9.33	4.59	9.43	-2.83	OK	NE					
RE*WINTSEWR	GR27-43	GR27-42	24	0.013	172.67	170.67	295.3	0.0068	5.94	12.0	0.0030	0%		7.41		8.91		9.33		9.43	-2.61	OK	NE					
RE*WINTSEWR	GR27-42	GR27-41	24	0.013	170.67	168.78	268	0.0071	6.06	12.3	0.0030	0%		7.41		8.91		9.33		9.43	-2.86	OK	NE					
RE*WINTSEWR	GR27-41	GR27-40	24	0.013	168.78	168.52	123	0.0021	3.32	6.7	0.0030	0%		7.41		8.91		9.33		9.43	2.70	18	2010					
RE*WINTSEWR	GR27-40	GR27-39	24	0.013	168.52	167.20	411.7	0.0032	4.09	8.3	0.0030	0%		7.41		8.91		9.33		9.43	1.15	12	2020					
RE*WINTSEWR	GR27-39	GR27-38	24	0.013	167.20	166.40	399	0.0020	3.23	6.6	0.0030	0%		7.41		8.91		9.33		9.43	2.88	18	2010					
RE*WINTSEWR	GR27-38	GR27-37	24	0.013	166.40	165.60	410	0.0020	3.19	6.5	0.0030	0%		7.41		8.91		9.33		9.43	2.97	18	2010					
RE*WINTSEWR	GR27-37	GR27-36	24	0.013	165.60	164.80	411	0.0019	3.19	6.5	0.0030	0%		7.41		8.91		9.33		9.43	2.97	18	2010					
RE*WINTSEWR	GR27-36	GR27-35	24	0.013	164.80	163.90	410	0.0022	3.38	6.9	0.0030	0%		7.41		8.91		9.33		9.43	2.57	18	2010					
RE*WINTSEWR	GR27-35	GR27-34	24	0.013	163.90	163.10	419	0.0019	3.15	6.4	0.0030	0%		7.41		8.91		9.33		9.43	3.04	18	2010					
RE*WINTSEWR	GR27-34	GR27-33	24	0.013	163.10	162.50	414	0.0014	2.75	5.6	0.0030	0%		7.41		8.91		9.33		9.43	3.86	21	2010					
RE*WINTSEWR	GR27-33	GR27-32A	24	0.013	162.50	162.40	117	0.0009	2.11	4.3	0.0030	0%		7.41		8.91		9.33		9.43	5.15	21	2010					
RE*WINTSEWR	GR27-32A	GR27-32	24	0.013	162.40	162.10	160	0.0019	3.13	6.3	0.0030	0%		7.41		8.91		9.33		9.43	3.10	18	2010					
RE*WINTSEWR	GR27-32	GR27-31	24	0.013	162.10	162.00	111	0.0009	2.17	4.4	0.0030	0%		7.41		8.91		9.33		9.43	5.04	21	2010					
CORRODED	REPLACE UPSTREAM		24	0.013		12.98	4278	0.0030	**3.98**	**8.1**	**0.0030**	0%		7.41		8.91		9.33		9.43	1.37	15	2020					15
RE*WINTSEWR	GR27-31	GR27-30	24	0.013	162.00	161.50	239	0.0021	3.30	6.7	0.0021	0%		7.41		8.91		9.33		9.43	2.73	18	2010					
RE*WINTSEWR	GR27-30	GR27-29	24	0.013	161.50	161.40	64	0.0016	2.86	5.8	0.0021	0%		7.41		8.91		9.33		9.43	3.64	21	2010					
RE*WINTSEWR	GR27-29	GR27-28	24	0.013	161.40	160.80	409	0.0015	2.77	5.6	0.0021	0%		7.41		8.91		9.33		9.43	3.82	21	2010					
RE*WINTSEWR	GR27-28	GR27-27	24	0.013	160.80	160.20	410	0.0015	2.76	5.6	0.0021	0%		7.41		8.91		9.33		9.43	3.83	21	2010					
RE*WINTSEWR	GR27-27	GR27-26	24	0.013	160.20	159.60	398	0.0015	2.80	5.7	0.0021	0%		7.41		8.91		9.33		9.43	3.75	21	2010					
RE*WINTSEWR	GR27-26	GR27-25	24	0.013	159.60	158.20	248	0.0056	5.42	11.0	0.0021	0%		7.41		8.91		9.33		9.43	-1.56	OK	NE					
	Section		24	0.013		3.80	1768	0.0021	**3.35**	**6.8**	**0.0021**	0%		7.41		8.91		9.33		9.43	2.64	18	2010					18
RE*WINTSEWR	GR27-25	GR27-24	36	0.013	158.20	157.60	433	0.0014	3.52	16.1	0.0013	0%		7.41		8.91		9.33		9.43	-6.63	OK	NE					
RE*WINTSEWR	GR27-24	GR27-23	36	0.013	157.60	157.00	445	0.0013	3.47	15.8	0.0013	0%		7.41		8.91		9.33		9.43	-6.41	OK	NE					
RE*WINTSEWR	GR27-23	GR27-22	36	0.013	157.00	156.50	445	0.0011	3.17	14.5	0.0013	0%		7.41		8.91		9.33		9.43	-5.03	OK	NE					
RE*WINTSEWR	GR27-22	GR27-21	36	0.013	156.50	155.90	443	0.0014	3.48	15.9	0.0013	0%		7.41		8.91		9.33		9.43	-6.45	OK	NE					
RE*WINTSEWR	GR27-21	GR27-20	36	0.013	155.90	155.50	310	0.0013	3.40	15.5	0.0013	0%		7.41		8.91		9.33		9.43	-6.07	OK	NE	0.15	0.40	0.25	0.18	
RE*WINTSEWR	GR27-20	GR27-19	36	0.013	155.50	154.90	421	0.0014	3.57	16.3	0.0013	55% wi-x	5.64	13.05	6.00	14.91	6.32	15.65	6.32	15.75	-0.54	OK	NE	0.56	0.60	0.04	-0.07	
RE*WINTSEWR	GR27-19	GR27-18	36	0.013	154.90	154.20	444	0.0016	3.76	17.1	0.0013	0%		13.05		14.91		15.65		15.75	-1.38	OK	NE	0.59	0.70	0.11	-0.11	
RE*WINTSEWR	GR27-18	GR27-17	36	0.013	154.20	153.10	498	0.0022	4.45	20.3	0.0013	0%		13.05		14.91		15.65		15.75	-4.53	OK	NE	0.66	1.10	0.44	-0.22	
RE*WINTSEWR*	GR27-17	GR27-16	36	0.013	153.10	153.00	490	0.0002	1.35	6.2	0.0013	0%		13.05		14.91		15.65		15.75	9.59	30	2010	0.65	0.10	**-0.55**	-0.66	ignore
RE*WINTSEWR	GR27-16	GR27-15	36	0.013	153.00	152.40	499	0.0012	3.28	15.0	0.0013	0%		13.05		14.91		15.65		15.75	0.79	12	2030	0.66	0.60	**-0.06**	-0.11	ignore
RE*WINTSEWR	GR27-15	GR27-14	36	0.013	152.40	151.80	488	0.0012	3.32	15.1	0.0013	0%		13.05		14.91		15.65		15.75	0.62	12	2030	0.65	0.60	**-0.05**	-0.05	ignore
	Section		36	0.013		6.40	4916	0.0013	**3.41**	**15.6**	**0.0013**	0%		13.05		14.91		15.65		15.75	0.18	9	2030					ok
RE*WINTSEWR	GR27-14	GR27-13	42	0.013	151.80	151.20	543	0.0011	3.49	21.6	0.0011	0%		13.05		14.91		15.65		15.75	-5.89	OK	NE					
RE*WINTSEWR	GR27-13	GR27-12B	42	0.013	151.20	150.90	110	0.0027	5.48	34.0	0.0011	0%		13.05		14.91		15.65		15.75	-18.24	OK	NE	0.06	0.30	0.24	0.19	
RE*WINTSEWR	GR27-12B	GR27-12	42	0.013	150.90	150.80	250	0.0004	2.10	13.0	0.0011	0%		13.05		14.91		15.65		15.75	2.73	21	2010	0.15	0.10	**-0.05**	-0.05	ignore
RE*WINTSEWR	GR27-12	GR27-11	42	0.013	150.80	150.40	309	0.0013	3.77	23.4	0.0011	0%		13.05		14.91		15.65		15.75	-7.67	OK	NE					
RE*WINTSEWR	GR27-11	GR27-10	42	0.013	150.40	150.00	428	0.0009	3.21	19.9	0.0011	0%		13.05		14.91		15.65		15.75	-4.15	OK	NE					
RE*WINTSEWR	GR27-10	GR27-09	42	0.013	150.00	149.80	206	0.0010	3.27	20.3	0.0011	0%		13.05		14.91		15.65		15.75	-4.53	OK	NE					
	Section		42	0.013		2.00	1846	0.0011	**3.45**	**21.4**	**0.0011**	0%		13.05		14.91		15.65		15.75	-5.68	OK	NE					OK
RE*WINTSEWR	GR27-09	GR27-08	42	0.013	149.80	149.10	503	0.0014	3.91	24.3	0.0014	0%		13.05		14.91		15.65		15.75	-8.53	OK	NE					
RE*WINTSEWR	GR27-08	GR27-07	42	0.013	149.10	148.50	499	0.0012	3.64	22.6	0.0014	0%		13.05		14.91		15.65		15.75	-6.82	OK	NE					
RE*WINTSEWR	GR27-07	GR27-06	42	0.013	148.50	147.80	479	0.0015	4.01	24.9	0.0014	0%		13.05		14.91		15.65		15.75	-9.13	OK	NE					
RE*WINTSEWR	GR27-06	GR27-05	42	0.013	147.80	147.30	426	0.0012	3.59	22.3	0.0014	0%		13.05		14.91		15.65		15.75	-6.55	OK	NE					
RE*WINTSEWR	GR27-05	GR27-04	42	0.013	147.30	146.80	398	0.0013	3.72	23.1	0.0014	0%		13.05		14.91		15.65		15.75	-7.32	OK	NE					
RE*WINTSEWR	GR27-04	GR27-03	42	0.013	146.80	146.60	121	0.0017	4.26	26.5	0.0014	0%		13.05		14.91		15.65		15.75	-10.71	OK	NE					
RE*WINTSEWR	GR27-03	GR27-02	42	0.013	146.60	145.70	636	0.0014	3.94	24.5	0.0014	0%		13.05		14.91		15.65		15.75	-8.74	OK	NE					
RE*WINTSEWR	GR27-02	GR27-01	42	0.013	145.70	144.80	628	0.0014	3.97	24.6	0.0014	5% wi-x	0.51	13.56	0.55	15.46	0.57	16.22	0.57	16.32	-8.32	OK	NE					
RE*WINTSEWR	GR27-01	R18H-78A	42	0.013	144.80	144.50	65	0.0046	7.12	44.2	0.0014	0%		13.56		15.46		16.22		16.32	-27.89	OK	NE					
	Section		42	0.013		5.30	3755	0.0014	**3.94**	**24.5**	**0.0014**	0%		13.56		15.46		16.22		16.32	-8.13	OK	NE					OK
TO AUBURN3.R18H-78A																												

Task 250 Report:
AUBURN PLANNING ZONE - PARALLEL ALTERNATIVE
I&I LIMITED TO 1,100 GPAD ON NEW CONSTRUCTION

Facility	Up-stream MH #	Down-stream MH #	Dia. (in.)	Manning n	Up-stream Inv Elev	Down-stream Inv Elev	Length (ft)	Slope (ft/ft)	Vfull (fps)	Cap. (mgd)	Herrera Proposed Slope	Modification Origin of Flow Percent	2010 Design Flow Inflow (mgd)	2010 Design Flow Total (mgd)	2020 Design Flow Inflow (mgd)	2020 Design Flow Total (mgd)	2030 Design Flow Inflow (mgd)	2030 Design Flow Total (mgd)	2050 Design Flow Inflow (mgd)	2050 Design Flow Total (mgd)	Excess (mgd)	Parallel Pipe (in.)	Decade Exceeded	Surcharge: any negative value in "BW elev" Δ elev FULL pipe	Δ elev	Δ−Δfull	BW elev (ft)	Proposed Diameter (inches)
M STREET TRUNK												100% seg-x	0.95	0.95	1.25	1.25	1.29	1.29	1.30	1.30			X					
RE*MSTTRUNK	GR19-49	GR19-48	18	0.013	200.10	199.10	422	0.0024	2.90	3.3	0.0023	70% mst-s	6.22	7.17	6.88	8.13	7.31	8.60	7.58	8.87	5.57	24	2010					
RE*MSTTRUNK	GR19-48	GR19-47	18	0.013	199.10	198.30	385	0.0021	2.72	3.1	0.0023	0%		7.17		8.13		8.60		8.87	5.78	24	2010					
RE*MSTTRUNK	GR19-47	GR19-46	18	0.013	198.30	198.05	102	0.0025	2.95	3.4	0.0023	0%		7.17		8.13		8.60		8.87	5.51	24	2010					
RE*MSTTRUNK	GR19-46	GR19-45	18	0.013	198.05	197.10	414	0.0023	2.86	3.3	0.0023	0%		7.17		8.13		8.60		8.87	5.62	24	2010					
RE*MSTTRUNK	GR19-45	GR19-44	18	0.013	197.10	196.40	322	0.0022	2.78	3.2	0.0023	0%		7.17		8.13		8.60		8.87	5.71	24	2010					
RE*MSTTRUNK	GR19-44	GR20-43	18	0.013	196.40	195.60	330	0.0024	2.94	3.3	0.0023	7% mst-s	0.62	7.79	0.69	8.81	0.73	9.34	0.76	9.63	6.28	24	2010					
	Section		18	0.013		4.50	1975	0.0023	**2.85**	**3.2**	**0.0023**	0%		7.79		8.81		9.34		9.63	6.39	24	2010					24
RE*MSTTRUNK	GR20-43	GR20-42	18	0.013	195.60	194.00	308	0.0052	4.30	4.9	0.0056	0%		7.79		8.81		9.34		9.63	4.74	18	2010					
RE*MSTTRUNK	GR20-42	GR20-41	18	0.013	194.00	192.40	320	0.0050	4.22	4.8	0.0056	0%		7.79		8.81		9.34		9.63	4.83	18	2010					
RE*MSTTRUNK	GR20-41	GR20-40	18	0.013	192.40	190.80	321	0.0050	4.21	4.8	0.0056	0%		7.79		8.81		9.34		9.63	4.83	18	2010					
RE*MSTTRUNK	GR20-40	GR21-39	18	0.013	190.80	188.90	362	0.0052	4.32	4.9	0.0056	0%		7.79		8.81		9.34		9.63	4.71	18	2010					
RE*MSTTRUNK	GR21-39	GR21-38	18	0.013	188.90	187.30	329	0.0049	4.16	4.7	0.0056	0%		7.79		8.81		9.34		9.63	4.89	18	2010					
RE*MSTTRUNK	GR21-38	GR21-37	18	0.013	187.30	185.60	340	0.0050	4.22	4.8	0.0056	8% mst-s	0.71	8.51	0.79	9.60	0.84	10.17	0.87	10.50	5.69	21	2010					
RE*MSTTRUNK	GR21-37	GR21-36A	18	0.013	185.60	185.20	77	0.0052	4.30	4.9	0.0056	0%		8.51		9.60		10.17		10.50	5.60	21	2010					
RE*MSTTRUNK	GR21-36A	GR21-36	18	0.013	185.20	183.90	252	0.0052	4.28	4.9	0.0056	0%		8.51		9.60		10.17		10.50	5.62	21	2010					
RE*MSTTRUNK	GR21-36	GR21-35	18	0.013	183.90	180.20	285	0.0130	6.79	7.7	0.0056	0%		8.51		9.60		10.17		10.50	2.76	15	2010					
RE*MSTTRUNK	GR21-35	GR21-34	18	0.013	180.20	178.40	342	0.0053	4.32	4.9	0.0056	0%		8.51		9.60		10.17		10.50	5.57	21	2010					
RE*MSTTRUNK	GR21-34	GR21-33	18	0.013	178.40	176.20	428	0.0051	4.27	4.9	0.0056	0%		8.51		9.60		10.17		10.50	5.63	21	2010					
RE*MSTTRUNK	GR21-33	GR21-32	18	0.013	176.20	174.10	430	0.0049	4.16	4.7	0.0056	0%		8.51		9.60		10.17		10.50	5.75	21	2010					
RE*MSTTRUNK	GR21-32	GR21-31	18	0.013	174.10	172.10	383	0.0052	4.31	4.9	0.0056	15% mst-s	1.33	9.84	1.47	11.07	1.57	11.74	1.62	12.12	7.21	21	2010					
RE*MSTTRUNK	GR21-31	GR22-30	18	0.013	172.10	170.20	382	0.0050	4.20	4.8	0.0056	0%		9.84		11.07		11.74		12.12	7.33	21	2010					
	Section*		18	0.013		25.40	4559	0.0056	**4.45**	**5.1**	**0.0056**	0%		9.84		11.07		11.74		12.12	7.05	21	2010					21
RE*MSTTRUNK	GR22-30*	GR22-29	24	0.013	163.70	163.40	177	0.0017	2.97	6.0	0.0018	0% mst-s		9.84		11.07		11.74		12.12	6.10	24	2010					
RE*MSTTRUNK	GR22-29*	GR22-28	24	0.013	163.40	163.10	165	0.0018	3.08	6.2	0.0018	0%		9.84		11.07		11.74		12.12	5.88	24	2010					
RE*MSTTRUNK	GR22-28*	GR22-27	24	0.013	163.10	162.80	167	0.0018	3.06	6.2	0.0018	0%		9.84		11.07		11.74		12.12	5.92	24	2010					
RE*MSTTRUNK	GR22-27*	GR22-26	24	0.013	162.80	162.50	160	0.0019	3.13	6.3	0.0018	0%		9.84		11.07		11.74		12.12	5.79	24	2010					
RE*MSTTRUNK	GR22-26*	GR22-25	24	0.013	162.50	162.30	153	0.0013	2.61	5.3	0.0018	0%		9.84		11.07		11.74		12.12	6.83	27	2010					
RE*MSTTRUNK	GR22-25*	GR22-24	24	0.013	162.30	162.00	128	0.0023	3.50	7.1	0.0018	0%		9.84		11.07		11.74		12.12	5.04	24	2010					
	Section*		24	0.013		1.70	950	0.0018	**3.06**	**6.2**	**0.0018**	0%		9.84		11.07		11.74		12.12	5.93	24	2010					24
RE*MSTTRUNK	GR22-24*	GR22-23	30	0.013	162.00	161.70	659	0.0005	1.79	5.7	0.0020	0%		9.84		11.07		11.74		12.12	6.46	24	2010					
RE*MSTTRUNK	GR22-23*	GR22-22B	30	0.013	161.70	161.30	605	0.0007	2.16	6.8	0.0020	0%		9.84		11.07		11.74		12.12	5.30	24	2010					
RE*MSTTRUNK	GR22-22B*	GR22-22A	30	0.013	161.30	161.10	302	0.0007	2.16	6.8	0.0020	0%		9.84		11.07		11.74		12.12	5.30	24	2010					
RE*MSTTRUNK	GR22-22A*	GR22-22	30	0.013	161.11	160.42	203	0.0034	4.87	15.4	0.0020	0%		9.84		11.07		11.74		12.12	-3.32	OK	NE					
RE*MSTTRUNK	GR22-22*	GR22-21A	30	0.013	160.42	159.79	188	0.0034	4.87	15.4	0.0020	0%		9.84		11.07		11.74		12.12	-3.32	OK	NE					
RE*MSTTRUNK	GR22-21A*	GR22-21	30	0.013	159.79	159.64	20	0.0073	7.18	22.7	0.0020	100% mst-e	2.97	12.81	3.38	14.45	3.57	15.30	3.64	15.76	-6.97	OK	NE					
RE*MSTTRUNK	GR22-21*	GR22-20	30	0.013	159.60	158.90	357	0.0020	3.71	11.7	0.0020	0%		12.81		14.45		15.30		15.76	4.01	21	2010					
RE*MSTTRUNK	GR22-20*	GR22-19	30	0.013	158.80	158.00	400	0.0020	3.75	11.9	0.0020	0%		12.81		14.45		15.30		15.76	3.90	21	2010					
RE*MSTTRUNK	GR22-19*	GR22-18	30	0.013	157.90	156.90	487	0.0021	3.80	12.0	0.0020	0%		12.81		14.45		15.30		15.76	3.74	21	2010					
RE*MSTTRUNK	GR22-18	GR22-17A	30	0.013	156.90	156.10	336	0.0024	4.09	12.9	0.0020	80% mst-n	1.38	14.20	1.53	15.98	1.64	16.95	1.74	17.50	4.55	21	2010					
RE*MSTTRUNK	GR22-17A	GR22-17	30	0.013	156.10	155.60	240	0.0021	3.82	12.1	0.0020	0%		14.20		15.98		16.95		17.50	5.39	24	2010					
RE*MSTTRUNK	GR22-17	GR22-16	30	0.013	155.60	155.40	59	0.0034	4.88	15.5	0.0020	0%		14.20		15.98		16.95		17.50	2.05	18	2020					
RE*MSTTRUNK	GR22-16	GR22-15	30	0.013	155.40	153.90	729	0.0021	3.80	12.0	0.0020	0%		14.20		15.98		16.95		17.50	5.46	24	2010					
RE*MSTTRUNK	GR22-15	GR22-14	30	0.013	153.90	153.80	13	0.0077	7.35	23.3	0.0020	0%		14.20		15.98		16.95		17.50	-5.77	OK	NE					
RE*MSTTRUNK	GR22-14	GR22-13A	30	0.013	153.80	152.50	687	0.0019	3.64	11.5	0.0020	0%		14.20		15.98		16.95		17.50	5.96	24	2010					
RE*MSTTRUNK	GR22-13A	GR22-13	30	0.013	152.50	151.80	236	0.0030	4.56	14.5	0.0020	0%		14.20		15.98		16.95		17.50	3.05	18	2020					
RE*MSTTRUNK	GR22-13	GR22-12A	30	0.013	151.80	151.50	134	0.0022	3.96	12.6	0.0020	0%		14.20		15.98		16.95		17.50	4.94	24	2010					
RE*MSTTRUNK	GR22-12A	GR22-12	30	0.013	151.50	150.30	518	0.0023	4.03	12.8	0.0020	0%		14.20		15.98		16.95		17.50	4.73	24	2010					
RE*MSTTRUNK	GR22-12	GR22-11	30	0.013	150.30	148.30	652	0.0031	4.64	14.7	0.0020	0%		14.20		15.98		16.95		17.50	2.80	18	2020					
	Section*		30	0.013		13.70	6825	0.0020	**3.75**	**11.9**	**0.0020**	0%		14.20		15.98		16.95		17.50	5.61	24	2010					24
RE*MSTTRUNK	GR22-11	GR22-10	36	0.013	148.30	147.90	704	0.0006	2.26	10.3	0.0008	0%		14.20		15.98		16.95		17.50	7.22	30	2010					
												20% mst-n	0.35	14.54	0.38	16.37	0.41	17.36	0.43	17.93			X					
												100% sss-sw	0.81	15.35	0.99	17.36	1.04	18.40	1.08	19.01			X					
RE*MSTTRUNK	GR22-10	GR22-08A	36	0.013	147.90	147.00	1079	0.0008	2.73	12.5	0.0008	100% mst-ne	0.88	16.22	1.16	18.52	1.23	19.63	1.28	20.29	7.83	33	2010					
RE*MSTTRUNK	GR22-08A	GR22-07	36	0.013	147.00	146.60	528	0.0008	2.60	11.9	0.0008	0%		16.22		18.52		19.63		20.29	8.41	33	2010					
RE*MSTTRUNK	GR22-07	GR22-06	36	0.013	146.60	146.40	237	0.0008	2.75	12.5	0.0008	0%		16.22		18.52		19.63		20.29	7.75	33	2010					
RE*MSTTRUNK	GR22-06	GR22-05	36	0.013	146.40	146.30	13	0.0077	8.30	37.8	0.0008	0%		16.22		18.52		19.63		20.29	-17.55	OK	NE					
RE*MSTTRUNK	GR22-05	GR22-04	36	0.013	146.30	146.10	269	0.0007	2.58	11.8	0.0008	0%		16.22		18.52		19.63		20.29	8.52	33	2010					
RE*MSTTRUNK	GR22-04	GR22-02A	36	0.013	146.10	145.60	655	0.0008	2.61	11.9	0.0008	0%		16.22		18.52		19.63		20.29	8.37	33	2010					
RE*MSTTRUNK	GR22-02A	GR22-02	36	0.013	145.60	145.30	348	0.0009	2.78	12.7	0.0008	0%		16.22		18.52		19.63		20.29	7.62	33	2010					
RE*MSTTRUNK	GR22-02*	R18H-78A	36	0.013	145.20	144.80	464	0.0009	2.78	12.7	0.0008	0%		16.22		18.52		19.63		20.29	7.62	33	2010					
	Section*		36	0.013		3.50	4297	0.0008	**2.70**	**12.3**	**0.0008**	0%		16.22		18.52		19.63		20.29	7.97	33	2010					33
TO AUBURN3.R18H-78A																												

Task 250 Report:
AUBURN PLANNING ZONE - PARALLEL ALTERNATIVE
I&I LIMITED TO 1,100 GPAD ON NEW CONSTRUCTION

Facility	Up-stream MH #	Down-stream MH #	Dia. (in.)	Manning n	Up-stream Inv Elev	Down-stream Inv Elev	Length (ft)	Slope (ft/ft)	Vfull (fps)	Cap. (mgd)	Herrera Proposed Slope	Modification Origin of Flow Percent	2010 Design Flow Inflow (mgd)	2010 Design Flow Total (mgd)	2020 Design Flow Inflow (mgd)	2020 Design Flow Total (mgd)	2030 Design Flow Inflow (mgd)	2030 Design Flow Total (mgd)	2050 Design Flow Inflow (mgd)	2050 Design Flow Total (mgd)	Excess (mgd)	Parallel Pipe (in.)	Decade Exceeded	Surcharge: any negative value in "BW elev" Δ elev FULL pipe	Δ elev	Δ−Δfull	BW elev (ft)	Proposed Diameter (inches)
do not delete row																												
												100% MSTTRK GR22-02	16.22	16.22	18.52	18.52	19.63	19.63	20.29	20.29			X					
AUBURN 3 TRUNK												100% WINTSEWR.GR 27-01	13.56	29.79	15.46	33.98	16.22	35.85	16.32	36.61			X					
RE*AUBURN3	R18H-78A	R18H-78	42	0.013	144.50	143.70	123	0.0065	8.46	52.5	0.0021	0%		29.79		33.98		35.85		36.61	-15.88	OK	NE					
RE*AUBURN3	R18H-78	R18H-77	42	0.013	143.70	140.90	480	0.0058	8.01	49.7	0.0021	0%		29.79		33.98		35.85		36.61	-13.10	OK	NE					
RE*AUBURN3	R18H-77	R18H-76	42	0.013	140.90	138.10	480	0.0058	8.01	49.7	0.0021	0%		29.79		33.98		35.85		36.61	-13.10	OK	NE					
RE*AUBURN3	R18H-76	R18H-75	42	0.013	138.10	135.30	480	0.0058	8.01	49.7	0.0021	0%		29.79		33.98		35.85		36.61	-13.10	OK	NE					
RE*AUBURN3	R18H-75	R18H-74	42	0.013	135.30	132.60	480	0.0056	7.86	48.8	0.0021	0%		29.79		33.98		35.85		36.61	-12.20	OK	NE					
	Section		42	0.013		11.90	2043	0.0058	**8.00**	**49.7**	**0.0058**	0%		29.79		33.98		35.85		36.61	-13.06	OK	NE					OK
RE*AUBURN3	R18H-74	R18H-73	72	0.013	131.40	131.00	162	0.0025	7.46	136.1	0.0021	100% aub3-c	2.60	32.39	3.10	37.08	3.28	39.13	3.40	40.01	-96.13	OK	NE	0.03	0.40	0.37	0.16	
RE*AUBURN3	R18H-73	R18H-72	72	0.013	131.00	131.10	499	-0.0002			0.0021	0%		32.39		37.08		39.13		40.01	40.01	48	2010	0.11	-0.10	-0.21	-0.21	IGNORE
RE*AUBURN3	R18H-72	R18H-71	72	0.013	131.10	130.80	500	0.0006	3.68	67.1	0.0021	0%		32.39		37.08		39.13		40.01	-27.10	OK	NE					
RE*AUBURN3	R18H-71	R18H-70	72	0.013	130.80	130.60	365	0.0005	3.52	64.1	0.0021	0%		32.39		37.08		39.13		40.01	-24.12	OK	NE					
RE*AUBURN3	R18H-70	R18H-69	72	0.013	130.60	130.50	363	0.0003	2.49	45.5	0.0021	0%		32.39		37.08		39.13		40.01	-5.46	OK	NE					
RE*AUBURN3	R18H-69	R18H-68	72	0.013	130.50	130.30	84	0.0024	7.33	133.7	0.0021	0%		32.39		37.08		39.13		40.01	-93.67	OK	NE					
RE*AUBURN3	R18H-68	R18H-67	72	0.013	130.30	130.10	421	0.0005	3.27	59.7	0.0021	0%		32.39		37.08		39.13		40.01	-19.71	OK	NE					
RE*AUBURN3	R18H-67	R18H-66	72	0.013	130.10	129.80	489	0.0006	3.72	67.9	0.0021	0%		32.39		37.08		39.13		40.01	-27.85	OK	NE					
RE*AUBURN3	R18H-66	R18H-65	72	0.013	129.80	129.20	489	0.0012	5.26	96.0	0.0021	0%		32.39		37.08		39.13		40.01	-55.96	OK	NE					
												100% WVAL 79-1	12.60	44.99	14.61	51.68	15.35	54.48	15.57	55.58			X					
RE*AUBURN3	R18H-65	R18H-64	72	0.013	129.20	128.90	610	0.0005	3.33	60.8	0.0021	0%		44.99		51.68		54.48		55.58	-5.18	OK	NE					
RE*AUBURN3	R18H-64	R18H-63	72	0.013	128.90	128.60	612	0.0005	3.33	60.7	0.0021	0%		44.99		51.68		54.48		55.58	-5.08	OK	NE					
RE*AUBURN3	R18H-63	R18H-62	72	0.013	128.60	128.50	87	0.0011	5.09	92.9	0.0021	0%		44.99		51.68		54.48		55.58	-37.31	OK	NE					
RE*AUBURN3	R18H-62	R18H-61	72	0.013	128.50	128.30	275	0.0007	4.05	73.9	0.0021	0%		44.99		51.68		54.48		55.58	-18.31	OK	NE					
RE*AUBURN3	R18H-61	R18H-59	72	0.013	128.30	127.90	556	0.0007	4.03	73.5	0.0021	0%		44.99		51.68		54.48		55.58	-17.91	OK	NE					
RE*AUBURN3	R18H-59	R18H-58	72	0.013	127.90	127.50	460	0.0009	4.43	80.8	0.0021	0%		44.99		51.68		54.48		55.58	-25.21	OK	NE	0.19	0.40	0.21	0.00	
	Section*		72	0.013		3.90	5972	0.0007	**3.84**	**70.0**	**0.0007**	0%		44.99		51.68		54.48		55.58	-14.44	OK	NE					ok
												100% fwaub-x	0.58	45.58	0.90	52.58	0.92	55.39	0.93	56.51			X					
												100% fwaub-w	0.50	46.08	0.77	53.35	0.79	56.19	0.80	57.31			X					
RE*AUBURN3	R18H-58	R18H-57	72	0.013	127.46	127.63	82	-0.0021			0.0006	100% aub3-nw	1.51	47.59	1.77	55.12	1.85	58.04	1.87	59.18	59.18	72	2010	0.04	-0.17	-0.21	-0.21	ignore
RE*AUBURN3	R18H-57	R18H-56	72	0.013	127.60	127.10	582	0.0009	4.40	80.3	0.0006	0%		47.59		55.12		58.04		59.18	-21.12	OK	NE					
RE*AUBURN3	R18H-56	R18H-55	72	0.013	127.10	126.80	525	0.0006	3.59	65.5	0.0006	0%		47.59		55.12		58.04		59.18	-6.31	OK	NE					
RE*AUBURN3	R18H-55	R18H-54	72	0.013	126.80	126.50	513	0.0006	3.63	66.3	0.0006	0%		47.59		55.12		58.04		59.18	-7.07	OK	NE					
RE*AUBURN3	R18H-54	R18H-53	72	0.013	126.50	126.10	515	0.0008	4.19	76.4	0.0006	0%		47.59		55.12		58.04		59.18	-17.17	OK	NE					
RE*AUBURN3	R18H-53	R18H-52	72	0.013	126.10	125.80	578	0.0005	3.42	62.4	0.0006	0%		47.59		55.12		58.04		59.18	-3.23	OK	NE					
RE*AUBURN3	R18H-52	R18H-51	72	0.013	125.80	125.50	530	0.0006	3.57	65.2	0.0006	0%		47.59		55.12		58.04		59.18	-6.00	OK	NE					
RE*AUBURN3	R18H-51	R18H-50	72	0.013	125.50	125.00	530	0.0009	4.61	84.1	0.0006	0%		47.59		55.12		58.04		59.18	-24.97	OK	NE	0.25	0.50	0.25	0.14	
RE*AUBURN3	R18H-50	R18H-49	72	0.013	125.00	124.70	311	0.0010	4.66	85.1	0.0006	0%		47.59		55.12		58.04		59.18	-25.91	OK	NE	0.14	0.30	0.16	-0.11	
RE*AUBURN3	R18H-49	R18H-48	72	0.013	124.70	124.50	1000	0.0002	2.12	38.7	0.0006	0%		47.59		55.12		58.04		59.18	20.44	48	2010	0.46	0.20	-0.26	-0.26	ignore
	Section*		72	0.013		2.96	5166	0.0006	**3.60**	**65.6**	**0.0006**	0%		47.59		55.12		58.04		59.18	-6.40	OK	NE					OK
TO AUBURN3.R18H-48												0%																
*RWSP pipe or section data revised.																												

APPENDIX 250-B

AUBURN PLANNING ZONE REROUTING ALTERNATIVE FLOW ROUTING WITH I/I HELD TO 1,100 GPAD ON NEW CONSTRUCTION

Task 250 Report:
AUBURN PLANNING ZONE - REROUTING ALTERNATIVE
20% I/I reduction effective in 200(

FACILITY	UP- STREAM MH #	DOWN- STREAM MH #	DIA. (IN)	Manning n	UP- STREAM INV ELEV	DOWN- STREAM INV ELEV	LENGTH (FT.)	SLOPE (FT/FT)	Vfull (FPS)	Cap. (MGD)	Herrera New Slope	Modification Origin of Flow Percent	2010 Design Flow Inflow (MGD)	2010 Design Flow Total (MGD)	2020 Design Flow Inflow (MGD)	2020 Design Flow Total (MGD)	2030 Design Flow Inflow (MGD)	2030 Design Flow Total (MGD)	2050 Design Flow Inflow (MGD)	2050 Design Flow Total (MGD)	Excess (MGD)	Parallel Pipe (in.)	Decade Exceeded	Surcharge: any negative value in "BW elev" Δ elev FULL pipe	Δ elev	Δ−Δfull	BW elev (ft)	Proposed Diameter (inches)
do not delete this line																												
LAKELAND HILLS TRUNK												100% lh-pc	0.95	0.95	1.38	1.38	1.44	1.44	1.50	1.50			X					
												100% wr-x	2.37	3.32	3.17	4.55	3.29	4.73	3.34	4.84			X					
LH TRUNK	LH#1	LH#2	21	0.013	194.99	175.41	6896	0.0028	3.52	5.5	0.0028	0%		3.32		4.55		4.73		4.84	-0.63	OK	NE					21
																							X					
TO SOUTHWEST TRUNK STK-1																												
STUCK TRUNK												100% seg-x	0.95	0.95	1.25	1.25	1.29	1.29	1.30	1.30			X					
STUCK/ M ST #49	MST	LH#2	24	0.013	199.60	174.60	5000	0.0050	5.11	10.3	0.0050	70% mst-s	6.22	7.17	6.88	8.13	7.31	8.60	7.58	8.87	-1.47	OK	NE					24
												50% wi-x	5.12	12.30	5.45	13.58	5.75	14.35	5.74	14.62			X					
												100% LH TRUNK	3.32	15.61	4.55	18.13	4.73	19.08	4.84	19.45	19.45		X					
STUCK	LH#2	LH#3	36	0.013	173.60	167.45	1800	0.0034	5.53	25.2	0.0034	0%		15.61		18.13		19.08		19.45	-5.78	OK	NE					36
STUCK match ex.IE	LH#3	WINT#32	42	0.013	166.95	162.10	2851	0.0017	4.32	26.8	0.0017	0%		15.61		18.13		19.08		19.45	-7.38	OK	NE					42
STUCK match ex.inv	WINT#32	SW7	36	0.013	161.60	147.90	4500	0.0030	5.22	23.8	0.0030	0%		15.61		18.13		19.08		19.45	-4.35	OK	NE					36
	Section*						**14151**	**0.0132**														OK	NE					
TO SOUTHWEST TRUNK SW-7																												
26TH ST. TRUNK																							X					
26th TRUNK	GR22-10	R18H-77	15	0.013	147.90	140.90	4297	0.0016	2.13	1.7	0.0008	100% mst-ne	0.88	0.88	1.16	1.16	1.23	1.23	1.28	1.28	-0.40	OK	NE					15
	Section*		**15**			**140.90**	**4297**	**0.0016**		**1.7**												OK	NE					
TO RE*AUBURN3.R18H-77																												
SOUTHWEST TRUNK												8% al-x	0.27	0.27	0.29	0.29	0.30	0.30	0.30	0.30			X					
												100% pac-x	2.54	2.81	2.88	3.17	3.06	3.36	3.15	3.46			X					
PACIFIC FM			12			165.60	2940					100% pac-a	2.31	5.13	2.64	5.81	2.79	6.14	2.81	6.27								
SW TRUNK	8	7	27	0.013	165.10	149.15	12000	0.0013	2.85	7.3	0.0013	0%		5.13		5.81		6.14		6.27	-1.04	OK	NE					
	Section*		27	**0.013**		**15.95**	**12000**	**0.0013**	**2.85**	**7.3**	0.0013	0%		5.13		5.81		6.14		6.27	-1.04	OK	NE					27
											0.0011	100% STUCK TRUNK	15.61	20.74	18.13	23.94	19.08	25.22	19.45	25.72			X					
SW TRUNK	7	6	48	0.013	147.40	146.99	380	0.0011	3.79	30.7	0.0011	100% fwne-w	1.51	22.25	2.26	26.20	2.31	27.54	2.34	28.06	-2.64	OK	NE					
SW TRUNK	6	5	48	0.013	146.99	146.40	538	0.0011	3.79	30.7	0.0011	10% aub3-s	0.13	22.38	0.15	26.35	0.16	27.70	0.16	28.22	-2.48	OK	NE					
SW TRUNK	5	4	48	0.013	146.40	145.88	475	0.0011	3.79	30.7	0.0011	0%		22.38		26.35		27.70		28.22	-2.48	OK	NE					
SW TRUNK	4	3	48	0.013	145.88	145.36	480	0.0011	3.79	30.7	0.0011	0%		22.38		26.35		27.70		28.22	-2.48	OK	NE					
SW TRUNK	3	2	48	0.013	145.36	144.83	482	0.0011	3.79	30.7	0.0011	0%		22.38		26.35		27.70		28.22	-2.48	OK	NE					
SW TRUNK	2	1	48	0.013	144.83	144.57	235	0.0011	3.79	30.7	0.0011	0%		22.38		26.35		27.70		28.22	-2.48	OK	NE					
	Section*		48	**0.013**		**2.83**	**2590**	**0.0011**	**3.79**	**30.7**	**0.0011**	0%		22.38		26.35		27.70		28.22	-2.48	OK	NE					48
		6,000 LF not required										0%		22.38		26.35		27.70		28.22			X					***48***
SW TRUNK	3	2	54	0.013	144.07	138.67	5410	0.0011	4.10	42.0	0.0035	100% fwne-x	1.55	23.93	1.75	28.10	1.84	29.54	1.86	30.08	-11.95	OK	NE					
SW TRUNK	2	1	54	0.013	138.67	132.40	5500	0.0011	4.19	43.0	0.0035	100% fwaub-w	0.50	24.43	0.77	28.87	0.79	30.33	0.80	30.88	-12.07	OK	NE					
												100% fwaub-x	0.58	25.01	0.90	29.77	0.92	31.25	0.93	31.81			X					
SW TRUNK @Aub3#48	1	R18H-44	48	0.013	132.90	126.50	5000	0.0013	4.10	33.2	0.0035	50% aub3-nw	0.75	25.77	0.88	30.65	0.93	32.17	0.94	32.75	-0.50	OK	NE					
	Section*		48	**0.013**		**17.57**	**15910**	**0.0035**	**6.79**	**55.1**	**0.0035**			25.77		30.65		32.17		32.75	-22.32	OK	NE					48
TO RE*AUBURN3.R18H-63																												

Task 250 Report:
AUBURN PLANNING ZONE - REROUTING ALTERNATIVE
20% I/I reduction effective in 200(

FACILITY	UP- STREAM MH #	DOWN- STREAM MH #	DIA. (IN)	Manning n	UP- STREAM INV ELEV	DOWN- STREAM INV ELEV	LENGTH (FT.)	SLOPE (FT/FT)	Vfull (FPS)	Cap. (MGD)	Herrera New Slope	Modification Origin of Flow Percent	2010 Design Flow Inflow (MGD)	2010 Design Flow Total (MGD)	2020 Design Flow Inflow (MGD)	2020 Design Flow Total (MGD)	2030 Design Flow Inflow (MGD)	2030 Design Flow Total (MGD)	2050 Design Flow Inflow (MGD)	2050 Design Flow Total (MGD)	Excess (MGD)	Parallel Pipe (in.)	Decade Exceeded	Surcharge: any negative value in "BW elev" Δ elev FULL pipe	Δ elev	Δ−Δfull	BW elev (ft)	Proposed Diameter (inches)
do not delete this line																												
ALGONA-PACIFIC & WEST												0%											X					
RE*ALPAC FORCEMAIN		238	12	0.013	144.50	165.60	2940					0%											X					
RE*ALPAC	238	237	21	0.013	165.60	165.30	400	0.0007	1.81	2.8	0.0012	0%									-2.81	OK	NE					
RE*ALPAC	237	230	21	0.013	165.30	164.90	401	0.0010	2.09	3.2	0.0012	0%									-3.24	OK	NE					
RE*ALPAC	230	229	21	0.013	164.90	164.70	135	0.0015	2.54	3.9	0.0012	12% al-x	**0.40**	0.40	**0.43**	0.43	**0.45**	0.45	**0.46**	0.46	-3.49	OK	NE					
RE*ALPAC	229	228	21	0.013	164.70	164.40	275	0.0011	2.18	3.4	0.0012	0%		0.40		0.43		0.45		0.46	-2.93	OK	NE					
RE*ALPAC	228	251	21	0.013	164.40	163.90	241	0.0021	3.01	4.7	0.0012	0%		0.40		0.43		0.45		0.46	-4.21	OK	NE					
RE*ALPAC	251	252	21	0.013	163.90	163.60	366	0.0008	1.89	2.9	0.0012	0%		0.40		0.43		0.45		0.46	-2.48	OK	NE					
RE*ALPAC	252	253	21	0.013	163.60	163.20	328	0.0012	2.31	3.6	0.0012	0%		0.40		0.43		0.45		0.46	-3.12	OK	NE					
RE*ALPAC	253	254	21	0.013	163.20	162.90	165	0.0018	2.81	4.4	0.0012	0%		0.40		0.43		0.45		0.46	-3.91	OK	NE					
RE*ALPAC	254	256	21	0.013	162.90	162.60	300	0.0010	2.09	3.2	0.0012	0%		0.40		0.43		0.45		0.46	-2.78	OK	NE					
	Section*		21	0.013		3.00	2611	0.0011		**3.5**	**0.0011**	0%		0.40		0.43		0.45		0.46	-3.02	OK	NE					OK
RE*ALPAC	256	257	24	0.013	162.60	162.50	89	0.0011	2.42	4.9	0.0012	40% al-x	**1.35**	1.75	**1.43**	1.86	**1.51**	1.96	**1.52**	1.98	-2.92	OK	NE					
RE*ALPAC	257	258	24	0.013	162.50	162.20	251	0.0012	2.50	5.1	0.0012	0%		1.75		1.86		1.96		1.98	-3.08	OK	NE					
RE*ALPAC	258	259	24	0.013	162.20	161.90	248	0.0012	2.51	5.1	0.0012	0%		1.75		1.86		1.96		1.98	-3.11	OK	NE					
RE*ALPAC	259	260	24	0.013	161.90	161.70	241	0.0008	2.08	4.2	0.0012	0%		1.75		1.86		1.96		1.98	-2.23	OK	NE					
RE*ALPAC	260	261	24	0.013	161.70	161.40	241	0.0012	2.55	5.2	0.0012	0%		1.75		1.86		1.96		1.98	-3.18	OK	NE					
RE*ALPAC	261	290	24	0.013	161.40	161.20	185	0.0011	2.37	4.8	0.0012	0%		1.75		1.86		1.96		1.98	-2.83	OK	NE					
RE*ALPAC	290	293	24	0.013	161.20	160.80	421	0.0010	2.22	4.5	0.0012	0%		1.75		1.86		1.96		1.98	-2.53	OK	NE					
RE*ALPAC	293	304	24	0.013	160.80	160.30	438	0.0011	2.44	4.9	0.0012	0%		1.75		1.86		1.96		1.98	-2.96	OK	NE					
RE*ALPAC	304	305	24	0.013	160.30	159.90	460	0.0009	2.13	4.3	0.0012	0%		1.75		1.86		1.96		1.98	-2.34	OK	NE					
RE*ALPAC	305	306	24	0.013	159.90	159.40	440	0.0011	2.44	4.9	0.0012	0%		1.75		1.86		1.96		1.98	-2.96	OK	NE					
RE*ALPAC	306	307	24	0.013	159.40	159.00	446	0.0009	2.16	4.4	0.0012	0%		1.75		1.86		1.96		1.98	-2.40	OK	NE					
RE*ALPAC	307	308	24	0.013	159.00	158.60	434	0.0009	2.19	4.4	0.0012	0%		1.75		1.86		1.96		1.98	-2.47	OK	NE					
RE*ALPAC	308	309	24	0.013	158.60	158.10	441	0.0011	2.43	4.9	0.0012	0%		1.75		1.86		1.96		1.98	-2.95	OK	NE					
RE*ALPAC	309	309B	24	0.013	158.10	157.80	340	0.0009	2.15	4.3	0.0012	0%		1.75		1.86		1.96		1.98	-2.37	OK	NE					
RE*ALPAC	309B	R83-17	24	0.013	157.80	157.20	345	0.0017	3.01	6.1	0.0012	40% al-x	**1.35**	3.10	**1.43**	3.30	**1.51**	3.47	**1.52**	3.50	-2.60	OK	NE					
	Section*		24	0.013		5.40	5020	0.0011		**4.8**	**0.0011**	0%		3.10		3.30		3.47		3.50	-1.30	OK	NE					OK
RE*AUBWVAL	R83-17	R83-16	24	0.013	157.20	156.40	437	0.0018	3.09	6.3	0.0012	0%		3.10		3.30		3.47		3.50	-2.76	OK	NE					
RE*AUBWVAL	R83-16	R83-15	24	0.013	156.40	156.00	39	0.0103	7.31	14.8	0.0012	0%		3.10		3.30		3.47		3.50	-11.32	OK	NE					
RE*AUBWVAL	R83-15	R83-14	24	0.013	156.00	154.80	367	0.0033	4.13	8.4	0.0012	0%		3.10		3.30		3.47		3.50	-4.87	OK	NE					
RE*AUBWVAL	R83-14	R83-13	24	0.013	154.80	154.00	369	0.0022	3.36	6.8	0.0012	0%		3.10		3.30		3.47		3.50	-3.31	OK	NE					
RE*AUBWVAL	R83-13	R83-12	24	0.013	154.00	153.60	408	0.0010	2.26	4.6	0.0012	0%		3.10		3.30		3.47		3.50	-1.08	OK	NE					
RE*AUBWVAL	R83-12	R83-11	24	0.013	153.60	153.30	371	0.0008	2.05	4.2	0.0012	0%		3.10		3.30		3.47		3.50	-0.66	OK	NE					
RE*AUBWVAL	R83-11	R83-10	24	0.013	153.30	153.10	339	0.0006	1.75	3.6	0.0012	0%		3.10		3.30		3.47		3.50	-0.05	OK	NE	0.19	0.20	0.01	-0.05	
RE*AUBWVAL	R83-10	R83-09	24	0.013	153.10	153.00	270	0.0004	1.39	2.8	0.0012	0%		3.10		3.30		3.47		3.50	0.68	12	2010	0.15	0.10	**-0.05**	-0.05	ignore
RE*AUBWVAL	R83-09	R83-08	24	0.013	153.00	152.50	221	0.0023	3.43	7.0	0.0012	0%		3.10		3.30		3.47		3.50	-3.46	OK	NE					
RE*AUBWVAL	R83-08	R83-07	24	0.013	152.50	152.10	467	0.0009	2.11	4.3	0.0012	0%		3.10		3.30		3.47		3.50	-0.78	OK	NE					
RE*AUBWVAL	R83-07	R83-06	24	0.013	152.10	151.80	380	0.0008	2.03	4.1	0.0012	0%		3.10		3.30		3.47		3.50	-0.61	OK	NE					
RE*AUBWVAL	R83-06	R83-05	24	0.013	151.80	151.20	538	0.0011	2.41	4.9	0.0012	0%		3.10		3.30		3.47		3.50	-1.39	OK	NE					
RE*AUBWVAL	R83-05	R83-04	24	0.013	151.20	150.80	475	0.0008	2.09	4.2	0.0012	0%		3.10		3.30		3.47		3.50	-0.74	OK	NE					
RE*AUBWVAL	R83-04	R83-03	24	0.013	150.80	150.20	480	0.0013	2.55	5.2	0.0012	0%		3.10		3.30		3.47		3.50	-1.67	OK	NE					
RE*AUBWVAL	R83-03	R83-02	24	0.013	150.20	149.80	482	0.0008	2.08	4.2	0.0012	0%		3.10		3.30		3.47		3.50	-0.71	OK	NE					
RE*AUBWVAL	R83-02	R83-01	24	0.013	149.80	149.20	235	0.0026	3.65	7.4	0.0012	0%		3.10		3.30		3.47		3.50	-3.89	OK	NE					
	Section		24	0.013		8.00	5878	0.0014	**2.66**	**5.4**	**0.0014**	0%		3.10		3.30		3.47		3.50	-1.90	OK	NE					OK

Task 250 Report:
AUBURN PLANNING ZONE - REROUTING ALTERNATIVE
20% I/I reduction effective in 200(

FACILITY	UP- STREAM MH #	DOWN-STREAM MH #	DIA. (IN)	Manning n	UP-STREAM INV ELEV	DOWN-STREAM INV ELEV	LENGTH (FT.)	SLOPE (FT/FT)	Vfull (FPS)	Cap. (MGD)	Herrera New Slope	Modification Origin of Flow Percent	2010 Design Flow Inflow (MGD)	2010 Design Flow Total (MGD)	2020 Design Flow Inflow (MGD)	2020 Design Flow Total (MGD)	2030 Design Flow Inflow (MGD)	2030 Design Flow Total (MGD)	2050 Design Flow Inflow (MGD)	2050 Design Flow Total (MGD)	Excess (MGD)	Parallel Pipe (in.)	Decade Exceeded	Surcharge: any negative value in "BW elev" Δ elev FULL pipe	Δ elev	Δ−Δfull	BW elev (ft)	Proposed Diameter (inches)
												0%		3.10		3.30		3.47		3.50			X					
WVAL	R83-01*	81-2	36	0.013	149.15	148.95	375	0.0005	2.18	10.0	0.0038	10% aub3-s	0.13	3.23	0.15	3.45	0.16	3.63	0.16	3.66	-6.30	OK	NE					
WVAL	81-2*	81-1	30	0.013	149.00	148.50	210	0.0024	4.09	12.9	0.0038	0%		3.23		3.45		3.63		3.66	-9.29	OK	NE					
WVAL	81-1*	80-8	42	0.013	148.50	148.42	70	0.0011	3.54	22.0	0.0038	0%		3.23		3.45		3.63		3.66	-18.34	OK	NE					
WVAL Main St*	80-8*	80-7	42	0.013	148.42	147.60	335	0.0024	5.19	32.2	0.0038	0%		3.23		3.45		3.63		3.66	-28.54	OK	NE					
WVAL	80-7*	80-6	30	0.013	147.60	147.00	167	0.0036	5.02	15.9	0.0038	0%		3.23		3.45		3.63		3.66	-12.24	OK	NE					
WVAL	80-6*	80-5	30	0.013	147.00	146.10	482	0.0019	3.62	11.5	0.0038	30% aub3-s	0.40	3.63	0.45	3.89	0.47	4.10	0.48	4.14	-7.32	OK	NE					
WVAL	80-5*	80-3	30	0.013	146.10	145.16	510	0.0018	3.60	11.4	0.0038	0%		3.63		3.89		4.10		4.14	-7.25	OK	NE					
WVAL	80-3*	80-2	30	0.013	145.16	144.50	441	0.0015	3.24	10.3	0.0038	0%		3.63		3.89		4.10		4.14	-6.12	OK	NE					
WVAL	80-2*	80-1	30	0.013	144.50	143.70	450	0.0018	3.53	11.2	0.0038	0%		3.63		3.89		4.10		4.14	-7.05	OK	NE					
WVAL	80-1*	79-23	30	0.013	143.70	142.80	447	0.0020	3.76	11.9	0.0038	0%		3.63		3.89		4.10		4.14	-7.76	OK	NE					
WVAL	79-23*	79-22	30	0.013	142.80	142.25	465	0.0012	2.88	9.1	0.0038	0%		3.63		3.89		4.10		4.14	-4.98	OK	NE					
WVAL	79-22*	79-21	30	0.013	142.25	141.95	450	0.0007	2.16	6.8	0.0038	0%		3.63		3.89		4.10		4.14	-2.70	OK	NE					
WVAL	79-21*	79-20	30	0.013	141.95	141.70	410	0.0006	2.07	6.6	0.0038	0%		3.63		3.89		4.10		4.14	-2.41	OK	NE					
WVAL	79-20*	79-19	30	0.013	141.70	141.48	363	0.0006	2.06	6.5	0.0038	0%		3.63		3.89		4.10		4.14	-2.39	OK	NE					
WVAL	79-19*	79-18	30	0.013	141.48	141.26	362	0.0006	2.07	6.5	0.0038	0%		3.63		3.89		4.10		4.14	-2.41	OK	NE					
WVAL	79-18*	79-17	30	0.013	141.26	141.00	425	0.0006	2.07	6.6	0.0038	0%		3.63		3.89		4.10		4.14	-2.42	OK	NE					
WVAL	79-17*	79-16	42	0.013	140.89	139.87	260	0.0039	6.57	40.8	0.0038	0%		3.63		3.89		4.10		4.14	-36.63	OK	NE					
WVAL	79-16*	79-15X	30	0.013	139.87	139.67	360	0.0006	1.97	6.3	0.0038	0%		3.63		3.89		4.10		4.14	-2.11	OK	NE					
WVAL	79-15X*	79-15	30	0.013	139.67	139.04	90	0.0070	7.01	22.2	0.0038	0%		3.63		3.89		4.10		4.14	-18.06	OK	NE					
WVAL	79-15*	79-14	30	0.013	139.04	138.15	410	0.0022	3.90	12.4	0.0038	0%		3.63		3.89		4.10		4.14	-8.22	OK	NE					
WVAL	79-14*	1	30	0.013	138.15	137.92	389	0.0006	2.04	6.5	0.0038	0%		3.63		3.89		4.10		4.14	-2.32	OK	NE					
	Section*		24	0.013		11.23	7470	0.0015	**2.80**	**5.7**	0.0015	0%		3.63		3.89		4.10		4.14	-1.54	OK	NE					OK
WVAL	1*	79-13	42	0.013	137.92	136.50	380	0.0037	6.41	39.8	0.0038	0%		3.63		3.89		4.10		4.14	-35.65	OK	NE					
WVAL	79-13*	79-12	30	0.013	136.50	136.40	100	0.0010	2.65	8.4	0.0038	0%		3.63		3.89		4.10		4.14	-4.27	OK	NE					
											0.0038	0%		3.63		3.89		4.10		4.14			X					
WVAL	79-12*	79-11	30	0.013	136.40	135.95	484	0.0009	2.55	8.1	0.0038	25% aub3-s	0.33	3.96	0.37	4.27	0.39	4.50	0.40	4.54	-3.55	OK	NE					
WVAL	79-11*	79-10	30	0.013	135.95	135.70	289	0.0009	2.46	7.8	0.0038	0%		3.96		4.27		4.50		4.54	-3.26	OK	NE					
WVAL	79-10*	79-9	30	0.013	135.70	135.41	364	0.0008	2.37	7.5	0.0038	0%		3.96		4.27		4.50		4.54	-2.95	OK	NE					
WVAL	79-9*	79-8	30	0.013	135.41	135.12	361	0.0008	2.38	7.5	0.0038	0%		3.96		4.27		4.50		4.54	-2.98	OK	NE					
WVAL	79-8*	79-6	30	0.013	135.12	134.83	362	0.0008	2.37	7.5	0.0038	0%		3.96		4.27		4.50		4.54	-2.97	OK	NE					
WVAL	79-6*	79-5	30	0.013	134.83	134.50	411	0.0008	2.37	7.5	0.0038	0%		3.96		4.27		4.50		4.54	-2.98	OK	NE					
WVAL	79-5*	79-4	30	0.013	134.50	134.09	496	0.0008	2.41	7.6	0.0038	0%		3.96		4.27		4.50		4.54	-3.09	OK	NE					
WVAL	3*	79-3	30	0.013	134.09	133.70	490	0.0008	2.36	7.5	0.0038	0%		3.96		4.27		4.50		4.54	-2.94	OK	NE					
WVAL	79-3*	79-2	30	0.013	133.70	133.42	373	0.0008	2.30	7.3	0.0038	25% aub3-s	0.33	4.29	0.37	4.64	0.39	4.89	0.40	4.94	-2.33	OK	NE					
WVAL	79-2*	79-1	30	0.013	133.42	133.40	39	0.0005	1.91	6.0	0.0038	0%		4.29		4.64		4.89		4.94	-1.10	OK	NE					
WVAL	79-1*	R18H-65	42	0.013	133.40	133.19	12	0.0175	13.87	86.1	0.0038	0%		4.29		4.64		4.89		4.94	-81.16	OK	NE					
	Section*		30	0.013		4.73	4160	0.0011	**2.83**	**8.9**	0.0011	0%		4.29		4.64		4.89		4.94	-4.01	OK	NE					OK
TO AUBURN3.R18H-65																												

Task 250 Report:
AUBURN PLANNING ZONE - REROUTING ALTERNATIVE
20% I/I reduction effective in 200(

FACILITY	UP- STREAM MH #	DOWN-STREAM MH #	DIA. (IN)	Manning n	UP-STREAM INV ELEV	DOWN-STREAM INV ELEV	LENGTH (FT.)	SLOPE (FT/FT)	Vfull (FPS)	Cap. (MGD)	Herrera New Slope	Modification Origin of Flow Percent	2010 Design Flow Inflow (MGD)	2010 Design Flow Total (MGD)	2020 Design Flow Inflow (MGD)	2020 Design Flow Total (MGD)	2030 Design Flow Inflow (MGD)	2030 Design Flow Total (MGD)	2050 Design Flow Inflow (MGD)	2050 Design Flow Total (MGD)	Excess (MGD)	Parallel Pipe (in.)	Decade Exceeded	Surcharge: any negative value in "BW elev" Δ elev FULL pipe	Δ elev	Δ−Δfull	BW elev (ft)	Proposed Diameter (inches)
WEST INTERCEPTOR												0%											X					
L. HILLS*			24	0.013	194.74	174.98	7269	0.0017	3.01	6.1	0.0027	0%									-6.10	OK	NE					
REPLACEMENT REQUIRED			27	0.013		19.76	7269	0.0027	**4.07**	**10.4**	**0.0027**	0%											X					
RE*WINTSEWR	GR27-44	GR27-43	24	0.013	174.98	172.67	329	0.0070	6.05	12.3	0.0236	0%									-12.26	OK	NE					
RE*WINTSEWR	GR27-43	GR27-42	24	0.013	172.67	170.67	295	0.0068	5.94	12.0	0.0236	0%									-12.05	OK	NE					
RE*WINTSEWR	GR27-42	GR27-41	24	0.013	170.67	168.78	268	0.0071	6.06	12.3	0.0236	0%									-12.29	OK	NE					
RE*WINTSEWR	GR27-41	GR27-40	24	0.013	168.78	168.52	123	0.0021	3.32	6.7	0.0236	0%									-6.73	OK	NE					
RE*WINTSEWR	GR27-40	GR27-39	24	0.013	168.52	167.20	412	0.0032	4.09	8.3	0.0236	0%									-8.28	OK	NE					
RE*WINTSEWR	GR27-39	GR27-38	24	0.013	167.20	166.40	399	0.0020	3.23	6.6	0.0236	0%									-6.55	OK	NE					
RE*WINTSEWR	GR27-38	GR27-37	24	0.013	166.40	165.60	410	0.0020	3.19	6.5	0.0236	0%									-6.46	OK	NE					
RE*WINTSEWR	GR27-37	GR27-36	24	0.013	165.60	164.80	411	0.0019	3.19	6.5	0.0236	0%									-6.46	OK	NE					
RE*WINTSEWR	GR27-36	GR27-35	24	0.013	164.80	163.90	410	0.0022	3.38	6.9	0.0236	0%									-6.86	OK	NE					
RE*WINTSEWR	GR27-35	GR27-34	24	0.013	163.90	163.10	419	0.0019	3.15	6.4	0.0236	0%									-6.39	OK	NE					
RE*WINTSEWR	GR27-34	GR27-33	24	0.013	163.10	162.50	414	0.0014	2.75	5.6	0.0236	0%									-5.57	OK	NE					
RE*WINTSEWR	GR27-33	GR27-32A	24	0.013	162.50	162.40	117	0.0009	2.11	4.3	0.0236	0%									-4.28	OK	NE					
RE*WINTSEWR	GR27-32A	GR27-32	24	0.013	162.40	162.10	160	0.0019	3.13	6.3	0.0236	0%									-6.34	OK	NE		0.30	0.30	0.26	
RE*WINTSEWR	GR27-32	GR27-31	24	0.013	162.10	162.00	111	0.0009	2.17	4.4	0.0236	45% wi-x	**4.61**	4.61	**4.91**	4.91	**5.17**	5.17	**5.17**	5.17	0.77	9	2010	0.14	0.10	**-0.04**	-0.04	ignore
CORRODED	REPLACE UPSTREAM		24	0.013		12.98	4278	0.0030	**3.98**	**8.1**	**0.0030**	0%		4.61		4.91		5.17		5.17	-2.89	OK	NE					LH GRAVITY
RE*WINTSEWR	GR27-31	GR27-30	24	0.013	162.00	161.50	239	0.0021	3.30	6.7	0.0236	0%		4.61		4.91		5.17		5.17	-1.53	OK	NE					
RE*WINTSEWR	GR27-30	GR27-29	24	0.013	161.50	161.40	64	0.0016	2.86	5.8	0.0236	0%		4.61		4.91		5.17		5.17	-0.62	OK	NE					
RE*WINTSEWR	GR27-29	GR27-28	24	0.013	161.40	160.80	409	0.0015	2.77	5.6	0.0236	0%		4.61		4.91		5.17		5.17	-0.44	OK	NE					
RE*WINTSEWR	GR27-28	GR27-27	24	0.013	160.80	160.20	410	0.0015	2.76	5.6	0.0236	0%		4.61		4.91		5.17		5.17	-0.43	OK	NE					
RE*WINTSEWR	GR27-27	GR27-26	24	0.013	160.20	159.60	398	0.0015	2.80	5.7	0.0236	0%		4.61		4.91		5.17		5.17	-0.52	OK	NE					
RE*WINTSEWR	GR27-26	GR27-25	24	0.013	159.60	158.20	248	0.0056	5.42	11.0	0.0236	0%		4.61		4.91		5.17		5.17	-5.83	OK	NE					
Section			24	0.013		3.80	1768	0.0021	**3.35**	**6.8**	**0.0021**	0%		4.61		4.91		5.17		5.17	-1.62	OK	NE					OK
RE*WINTSEWR	GR27-25	GR27-24	36	0.013	158.20	157.60	433	0.0014	3.52	16.1	0.0236	0%		4.61		4.91		5.17		5.17	-10.90	OK	NE					
RE*WINTSEWR	GR27-24	GR27-23	36	0.013	157.60	157.00	445	0.0013	3.47	15.8	0.0236	0%		4.61		4.91		5.17		5.17	-10.68	OK	NE					
RE*WINTSEWR	GR27-23	GR27-22	36	0.013	157.00	156.50	445	0.0011	3.17	14.5	0.0236	0%		4.61		4.91		5.17		5.17	-9.30	OK	NE					
RE*WINTSEWR	GR27-22	GR27-21	36	0.013	156.50	155.90	443	0.0014	3.48	15.9	0.0236	0%		4.61		4.91		5.17		5.17	-10.71	OK	NE					
RE*WINTSEWR	GR27-21	GR27-20	36	0.013	155.90	155.50	310	0.0013	3.40	15.5	0.0236	0%		4.61		4.91		5.17		5.17	-10.33	OK	NE					
RE*WINTSEWR	GR27-20	GR27-19	36	0.013	155.50	154.90	421	0.0014	3.57	16.3	0.0236	0%		4.61		4.91		5.17		5.17	-11.12	OK	NE					
RE*WINTSEWR	GR27-19	GR27-18	36	0.013	154.90	154.20	444	0.0016	3.76	17.1	0.0236	0%		4.61		4.91		5.17		5.17	-11.96	OK	NE					
RE*WINTSEWR	GR27-18	GR27-17	36	0.013	154.20	153.10	498	0.0022	4.45	20.3	0.0236	0%		4.61		4.91		5.17		5.17	-15.11	OK	NE					
RE*WINTSEWR*	GR27-17	GR27-16	36	0.013	153.10	153.00	490	0.0002	1.35	6.2	0.0236	0%		4.61		4.91		5.17		5.17	-0.99	OK	NE					
RE*WINTSEWR	GR27-16	GR27-15	36	0.013	153.00	152.40	499	0.0012	3.28	15.0	0.0236	0%		4.61		4.91		5.17		5.17	-9.79	OK	NE					
RE*WINTSEWR	GR27-15	GR27-14	36	0.013	152.40	151.80	488	0.0012	3.32	15.1	0.0236	0%		4.61		4.91		5.17		5.17	-9.96	OK	NE					
Section			36	0.013		6.40	4916	0.0013	**3.41**	**15.6**	**0.0013**	0%		4.61		4.91		5.17		5.17	-10.40	OK	NE					OK
RE*WINTSEWR	GR27-14	GR27-13	42	0.013	151.80	151.20	543	0.0011	3.49	21.6	0.0236	0%		4.61		4.91		5.17		5.17	-16.47	OK	NE					
RE*WINTSEWR	GR27-13	GR27-12B	42	0.013	151.20	150.90	110	0.0027	5.48	34.0	0.0236	0%		4.61		4.91		5.17		5.17	-28.82	OK	NE					
RE*WINTSEWR	GR27-12B	GR27-12	42	0.013	150.90	150.80	250	0.0004	2.10	13.0	0.0236	0%		4.61		4.91		5.17		5.17	-7.85	OK	NE					
RE*WINTSEWR	GR27-12	GR27-11	42	0.013	150.80	150.40	309	0.0013	3.77	23.4	0.0236	0%		4.61		4.91		5.17		5.17	-18.25	OK	NE					
RE*WINTSEWR	GR27-11	GR27-10	42	0.013	150.40	150.00	428	0.0009	3.21	19.9	0.0236	0%		4.61		4.91		5.17		5.17	-14.73	OK	NE					
RE*WINTSEWR	GR27-10	GR27-09	42	0.013	150.00	149.80	206	0.0010	3.27	20.3	0.0236	0%		4.61		4.91		5.17		5.17	-15.11	OK	NE					
Section			42	0.013		2.00	1846	0.0011	3.45	21.4		0%		4.61		4.91		5.17		5.17	-16.26	OK	NE					
RE*WINTSEWR	GR27-09	GR27-08	42	0.013	149.80	149.10	503	0.0014	3.91	24.3	0.0236	0%		4.61		4.91		5.17		5.17	-19.11	OK	NE					
RE*WINTSEWR	GR27-08	GR27-07	42	0.013	149.10	148.50	499	0.0012	3.64	22.6	0.0236	0%		4.61		4.91		5.17		5.17	-17.40	OK	NE					
RE*WINTSEWR	GR27-07	GR27-06	42	0.013	148.50	147.80	479	0.0015	4.01	24.9	0.0236	0%		4.61		4.91		5.17		5.17	-19.71	OK	NE					
RE*WINTSEWR	GR27-06	GR27-05	42	0.013	147.80	147.30	426	0.0012	3.59	22.3	0.0236	0%		4.61		4.91		5.17		5.17	-17.13	OK	NE					
RE*WINTSEWR	GR27-05	GR27-04	42	0.013	147.30	146.80	398	0.0013	3.72	23.1	0.0236	0%		4.61		4.91		5.17		5.17	-17.90	OK	NE					
RE*WINTSEWR	GR27-04	GR27-03	42	0.013	146.80	146.60	121	0.0017	4.26	26.5	0.0236	0%		4.61		4.91		5.17		5.17	-21.29	OK	NE					
RE*WINTSEWR	GR27-03	GR27-02	42	0.013	146.60	145.70	636	0.0014	3.94	24.5	0.0236	0%		4.61		4.91		5.17		5.17	-19.32	OK	NE					
RE*WINTSEWR	GR27-02	GR27-01	42	0.013	145.70	144.80	628	0.0014	3.97	24.6	0.0236	5% wi-x	**0.51**	5.12	**0.55**	5.45	**0.57**	5.75	**0.57**	5.74	-18.90	OK	NE					
RE*WINTSEWR	GR27-01	R18H-78A	42	0.013	144.80	144.50	65	0.0046	7.12	44.2	0.0236	0%		5.12		5.45		5.75		5.74	-38.47	OK	NE					
Section			42	0.013		5.30	3755	0.0014	**3.94**	**24.5**	**0.0014**	0%		5.12		5.45		5.75		5.74	-18.71	OK	NE					OK
TO AUBURN3.R18H-78A																												

AUBURN PLANNING ZONE
TASK 250 REROUTING ALTERNATIVE
I/I HELD TO 1,100 GPAD ON NEW CONSTRUCTION

Task 250 Report:
AUBURN PLANNING ZONE - REROUTING ALTERNATIVE
20% I/I reduction effective in 200(

FACILITY	UP- STREAM MH #	DOWN- STREAM MH #	DIA. (IN)	Manning n	UP- STREAM INV ELEV	DOWN- STREAM INV ELEV	LENGTH (FT.)	SLOPE (FT/FT)	Vfull (FPS)	Cap. (MGD)	Herrera New Slope	Modification Origin of Flow Percent	2010 Design Flow Inflow (MGD)	2010 Design Flow Total (MGD)	2020 Design Flow Inflow (MGD)	2020 Design Flow Total (MGD)	2030 Design Flow Inflow (MGD)	2030 Design Flow Total (MGD)	2050 Design Flow Inflow (MGD)	2050 Design Flow Total (MGD)	Excess (MGD)	Parallel Pipe (in.)	Decade Exceeded	Surcharge: any negative value in "BW elev" Δ elev FULL pipe	Δ elev	Δ−Δfull	BW elev (ft)	Proposed Diameter (inches)
M STREET TRUNK												0%											X					
RE*MSTTRUNK	GR19-49	GR19-48	18	0.013	200.10	199.10	422	0.0024	2.90	3.3	0.0036	0%									-3.31	OK	NE					
RE*MSTTRUNK	GR19-48	GR19-47	18	0.013	199.10	198.30	385	0.0021	2.72	3.1	0.0036	0%									-3.10	OK	NE					
RE*MSTTRUNK	GR19-47	GR19-46	18	0.013	198.30	198.05	102	0.0025	2.95	3.4	0.0036	0%									-3.36	OK	NE					
RE*MSTTRUNK	GR19-46	GR19-45	18	0.013	198.05	197.10	414	0.0023	2.86	3.3	0.0036	0%									-3.26	OK	NE					
RE*MSTTRUNK	GR19-45	GR19-44	18	0.013	197.10	196.40	322	0.0022	2.78	3.2	0.0036	0%									-3.17	OK	NE					
RE*MSTTRUNK	GR19-44	GR20-43	18	0.013	196.40	195.60	330	0.0024	2.94	3.3	0.0036	7% mst-s	**0.62**	0.62	**0.69**	0.69	**0.73**	0.73	**0.76**	0.76	-2.59	OK	NE					
	Section		18	0.013		4.50	1975	0.0023	**2.85**	**3.2**	**0.0023**	0%		0.62		0.69		0.73		0.76	-2.49	OK	NE					OK
RE*MSTTRUNK	GR20-43	GR20-42	18	0.013	195.60	194.00	308	0.0052	4.30	4.9	0.0036	0%		0.62		0.69		0.73		0.76	-4.14	OK	NE					
RE*MSTTRUNK	GR20-42	GR20-41	18	0.013	194.00	192.40	320	0.0050	4.22	4.8	0.0036	0%		0.62		0.69		0.73		0.76	-4.05	OK	NE					
RE*MSTTRUNK	GR20-41	GR20-40	18	0.013	192.40	190.80	321	0.0050	4.21	4.8	0.0036	0%		0.62		0.69		0.73		0.76	-4.04	OK	NE					
RE*MSTTRUNK	GR20-40	GR21-39	18	0.013	190.80	188.90	362	0.0052	4.32	4.9	0.0036	0%		0.62		0.69		0.73		0.76	-4.17	OK	NE					
RE*MSTTRUNK	GR21-39	GR21-38	18	0.013	188.90	187.30	329	0.0049	4.16	4.7	0.0036	0%		0.62		0.69		0.73		0.76	-3.98	OK	NE					
RE*MSTTRUNK	GR21-38	GR21-37	18	0.013	187.30	185.60	340	0.0050	4.22	4.8	0.0036	8% mst-s	**0.71**	1.33	**0.79**	1.47	**0.84**	1.57	**0.87**	1.62	-3.18	OK	NE					
RE*MSTTRUNK	GR21-37	GR21-36A	18	0.013	185.60	185.20	77	0.0052	4.30	4.9	0.0036	0%		1.33		1.47		1.57		1.62	-3.27	OK	NE					
RE*MSTTRUNK	GR21-36A	GR21-36	18	0.013	185.20	183.90	252	0.0052	4.28	4.9	0.0036	0%		1.33		1.47		1.57		1.62	-3.25	OK	NE					
RE*MSTTRUNK	GR21-36	GR21-35	18	0.013	183.90	180.20	285	0.0130	6.79	7.7	0.0036	0%		1.33		1.47		1.57		1.62	-6.12	OK	NE					
RE*MSTTRUNK	GR21-35	GR21-34	18	0.013	180.20	178.40	342	0.0053	4.32	4.9	0.0036	0%		1.33		1.47		1.57		1.62	-3.31	OK	NE					
RE*MSTTRUNK	GR21-34	GR21-33	18	0.013	178.40	176.20	428	0.0051	4.27	4.9	0.0036	0%		1.33		1.47		1.57		1.62	-3.25	OK	NE					
RE*MSTTRUNK	GR21-33	GR21-32	18	0.013	176.20	174.10	430	0.0049	4.16	4.7	0.0036	0%		1.33		1.47		1.57		1.62	-3.13	OK	NE					
RE*MSTTRUNK	GR21-32	GR21-31	18	0.013	174.10	172.10	383	0.0052	4.31	4.9	0.0036	15% mst-s	**1.33**	2.66	**1.47**	2.95	**1.57**	3.13	**1.62**	3.25	-1.66	OK	NE					
RE*MSTTRUNK	GR21-31	GR22-30	18	0.013	172.10	170.20	382	0.0050	4.20	4.8	0.0036	0%		2.66		2.95		3.13		3.25	-1.55	OK	NE					
	Section*		18	0.013		25.40	4559	0.0056	**4.45**	**5.1**	**0.0056**	0%		2.66		2.95		3.13		3.25	-1.82	OK	NE					OK
RE*MSTTRUNK	GR22-30*	GR22-29	24	0.013	163.70	163.40	177	0.0017	2.97	6.0	0.0036	0%		2.66		2.95		3.13		3.25	-2.78	OK	NE					
RE*MSTTRUNK	GR22-29*	GR22-28	24	0.013	163.40	163.10	165	0.0018	3.08	6.2	0.0036	0%		2.66		2.95		3.13		3.25	-2.99	OK	NE					
RE*MSTTRUNK	GR22-28*	GR22-27	24	0.013	163.10	162.80	167	0.0018	3.06	6.2	0.0036	0%		2.66		2.95		3.13		3.25	-2.95	OK	NE					
RE*MSTTRUNK	GR22-27*	GR22-26	24	0.013	162.80	162.50	160	0.0019	3.13	6.3	0.0036	0%		2.66		2.95		3.13		3.25	-3.09	OK	NE					
RE*MSTTRUNK	GR22-26*	GR22-25	24	0.013	162.50	162.30	153	0.0013	2.61	5.3	0.0036	0%		2.66		2.95		3.13		3.25	-2.04	OK	NE					
RE*MSTTRUNK	GR22-25*	GR22-24	24	0.013	162.30	162.00	128	0.0023	3.50	7.1	0.0036	0%		2.66		2.95		3.13		3.25	-3.84	OK	NE					
	Section*		24	0.013		1.70	950	0.0018	**3.06**	**6.2**	**0.0018**	0%		2.66		2.95		3.13		3.25	-2.95	OK	NE					OK
RE*MSTTRUNK	GR22-24*	GR22-23	30	0.013	162.00	161.70	659	0.0005	1.79	5.7	0.0036	0%		2.66		2.95		3.13		3.25	-2.42	OK	NE					
RE*MSTTRUNK	GR22-23*	GR22-22B	30	0.013	161.70	161.30	605	0.0007	2.16	6.8	0.0036	0%		2.66		2.95		3.13		3.25	-3.58	OK	NE					
RE*MSTTRUNK	GR22-22B*	GR22-22A	30	0.013	161.30	161.10	302	0.0007	2.16	6.8	0.0036	0%		2.66		2.95		3.13		3.25	-3.58	OK	NE					
RE*MSTTRUNK	GR22-22A*	GR22-22	30	0.013	161.11	160.42	203	0.0034	4.87	15.4	0.0036	0%		2.66		2.95		3.13		3.25	-12.19	OK	NE					
RE*MSTTRUNK	GR22-22*	GR22-21A	30	0.013	160.42	159.79	188	0.0034	4.87	15.4	0.0036	0%		2.66		2.95		3.13		3.25	-12.19	OK	NE					
RE*MSTTRUNK	GR22-21A*	GR22-21	30	0.013	159.79	159.64	20	0.0073	7.18	22.7	0.0036	100% mst-e	**2.97**	5.64	**3.38**	6.33	**3.57**	6.70	**3.64**	6.89	-15.85	OK	NE					
RE*MSTTRUNK	GR22-21*	GR22-20	30	0.013	159.60	158.90	357	0.0020	3.71	11.7	0.0036	0%		5.64		6.33		6.70		6.89	-4.86	OK	NE					
RE*MSTTRUNK	GR22-20*	GR22-19	30	0.013	158.80	158.00	400	0.0020	3.75	11.9	0.0036	0%		5.64		6.33		6.70		6.89	-4.98	OK	NE					
RE*MSTTRUNK	GR22-19*	GR22-18	30	0.013	157.90	156.90	487	0.0021	3.80	12.0	0.0036	0%		5.64		6.33		6.70		6.89	-5.14	OK	NE					
RE*MSTTRUNK	GR22-18	GR22-17A	30	0.013	156.90	156.10	336	0.0024	4.09	12.9	0.0036	80% mst-n	**1.38**	7.02	**1.53**	7.86	**1.64**	8.34	**1.74**	8.62	-4.32	OK	NE					
RE*MSTTRUNK	GR22-17A	GR22-17	30	0.013	156.10	155.60	240	0.0021	3.82	12.1	0.0036	0%		7.02		7.86		8.34		8.62	-3.48	OK	NE					
RE*MSTTRUNK	GR22-17	GR22-16	30	0.013	155.60	155.40	59	0.0034	4.88	15.5	0.0036	0%		7.02		7.86		8.34		8.62	-6.83	OK	NE					
RE*MSTTRUNK	GR22-16	GR22-15	30	0.013	155.40	153.90	729	0.0021	3.80	12.0	0.0036	0%		7.02		7.86		8.34		8.62	-3.41	OK	NE					
RE*MSTTRUNK	GR22-15	GR22-14	30	0.013	153.90	153.80	13	0.0077	7.35	23.3	0.0036	0%		7.02		7.86		8.34		8.62	-14.65	OK	NE					
RE*MSTTRUNK	GR22-14	GR22-13A	30	0.013	153.80	152.50	687	0.0019	3.64	11.5	0.0036	0%		7.02		7.86		8.34		8.62	-2.92	OK	NE					
RE*MSTTRUNK	GR22-13A	GR22-13	30	0.013	152.50	151.80	236	0.0030	4.56	14.5	0.0036	0%		7.02		7.86		8.34		8.62	-5.83	OK	NE					
RE*MSTTRUNK	GR22-13	GR22-12A	30	0.013	151.80	151.50	134	0.0022	3.96	12.6	0.0036	0%		7.02		7.86		8.34		8.62	-3.93	OK	NE					
RE*MSTTRUNK	GR22-12A	GR22-12	30	0.013	151.50	150.30	518	0.0023	4.03	12.8	0.0036	0%		7.02		7.86		8.34		8.62	-4.15	OK	NE					
RE*MSTTRUNK	GR22-12	GR22-11	30	0.013	150.30	148.30	652	0.0031	4.64	14.7	0.0036	0%		7.02		7.86		8.34		8.62	-6.07	OK	NE					
	Section*		30	0.013		13.70	6825	0.0020	**3.75**	**11.9**	**0.0020**	0%		7.02		7.86		8.34		8.62	-3.27	OK	NE					OK
RE*MSTTRUNK	GR22-11	GR22-10	36	0.013	148.30	147.90	704	0.0006	2.26	10.3	0.0008	0%		7.02		7.86		8.34		8.62	-1.66	OK	NE					
												100% sss-sw	**0.81**	7.83	**0.99**	8.85	**1.04**	9.38	**1.08**	9.70			X					
RE*MSTTRUNK	GR22-10	GR22-08A	36	0.013	147.90	147.00	1079	0.0008	2.73	12.5	0.0008	20% mst-n	**0.35**	8.18	**0.38**	9.23	**0.41**	9.80	**0.43**	10.13	-2.32	OK	NE					
RE*MSTTRUNK	GR22-08A	GR22-07	36	0.013	147.00	146.60	528	0.0008	2.60	11.9	0.0008	0%		8.18		9.23		9.80		10.13	-1.74	OK	NE					
RE*MSTTRUNK	GR22-07	GR22-06	36	0.013	146.60	146.40	237	0.0008	2.75	12.5	0.0008	0%		8.18		9.23		9.80		10.13	-2.40	OK	NE					
RE*MSTTRUNK	GR22-06	GR22-05	36	0.013	146.40	146.30	13	0.0077	8.30	37.8	0.0008	0%		8.18		9.23		9.80		10.13	-27.71	OK	NE					
RE*MSTTRUNK	GR22-05	GR22-04	36	0.013	146.30	146.10	269	0.0007	2.58	11.8	0.0008	0%		8.18		9.23		9.80		10.13	-1.63	OK	NE					
RE*MSTTRUNK	GR22-04	GR22-02A	36	0.013	146.10	145.60	655	0.0008	2.61	11.9	0.0008	0%		8.18		9.23		9.80		10.13	-1.79	OK	NE					
RE*MSTTRUNK	GR22-02A	GR22-02	36	0.013	145.60	145.30	348	0.0009	2.78	12.7	0.0008	0%		8.18		9.23		9.80		10.13	-2.54	OK	NE					
RE*MSTTRUNK	GR22-02*	R18H-78A	36	0.013	145.20	144.80	464	0.0009	2.78	12.7	0.0008	0%		8.18		9.23		9.80		10.13	-2.54	OK	NE					
	Section*		36	0.013		3.50	4297	0.0008	**2.70**	**12.3**	**0.0008**	0%		8.18		9.23		9.80		10.13	-2.18	OK	NE					OK
TO AUBURN3.R18H-78A																												

AUBURN PLANNING ZONE
TASK 250 REROUTING ALTERNATIVE
I/I HELD TO 1,100 GPAD ON NEW CONSTRUCTION

Task 250 Report:
AUBURN PLANNING ZONE - REROUTING ALTERNATIVE
20% I/I reduction effective in 200(

FACILITY	UP- STREAM MH #	DOWN- STREAM MH #	DIA. (IN)	Manning n	UP- STREAM INV ELEV	DOWN- STREAM INV ELEV	LENGTH (FT.)	SLOPE (FT/FT)	Vfull (FPS)	Cap. (MGD)	Herrera New Slope	Modification Origin of Flow Percent	2010 Design Flow Inflow (MGD)	2010 Design Flow Total (MGD)	2020 Design Flow Inflow (MGD)	2020 Design Flow Total (MGD)	2030 Design Flow Inflow (MGD)	2030 Design Flow Total (MGD)	2050 Design Flow Inflow (MGD)	2050 Design Flow Total (MGD)	Excess (MGD)	Parallel Pipe (in.)	Decade Exceeded	Surcharge: any negative value in "BW elev" Δ elev FULL pipe	Δ elev	Δ−Δfull	BW elev (ft)	Proposed Diameter (inches)
AUBURN 3 TRUNK												100% MSTTRK	8.18	8.18	9.23	9.23	9.80	9.80	10.13	10.13			X					
												100% WINTSEWR	5.12	13.30	5.45	14.68	5.75	15.54	5.74	15.88			X					
RE*AUBURN3	R18H-78A	R18H-78	42	0.013	144.50	143.70	123	0.0065	8.46	52.5	0.0021	0%		13.30		14.68		15.54		15.88	-36.61	OK	NE					
RE*AUBURN3	R18H-78	R18H-77	42	0.013	143.70	140.90	480	0.0058	8.01	49.7	0.0021	0%		13.30		14.68		15.54		15.88	-33.83	OK	NE					
											0.0021	100% 26TH ST. TRUNK	0.88	14.17	1.16	15.85	1.23	16.77	1.28	17.16			X					
RE*AUBURN3	R18H-77	R18H-76	42	0.013	140.90	138.10	480	0.0058	8.01	49.7	0.0021	0%		14.17		15.85		16.77		17.16	-32.55	OK	NE					
RE*AUBURN3	R18H-76	R18H-75	42	0.013	138.10	135.30	480	0.0058	8.01	49.7	0.0021	0%		14.17		15.85		16.77		17.16	-32.55	OK	NE					
RE*AUBURN3	R18H-75	R18H-74	42	0.013	135.30	132.60	480	0.0056	7.86	48.8	0.0021	0%		14.17		15.85		16.77		17.16	-31.66	OK	NE					
	Section		42	0.013		11.90	2043	0.0058	**8.00**	**49.7**	**0.0058**	0%		14.17		15.85		16.77		17.16	-32.51	OK	NE					OK
RE*AUBURN3	R18H-74	R18H-73	72	0.013	131.40	131.00	162	0.0025	7.46	136.1	0.0021	100% aub3-c	2.60	16.78	3.10	18.95	3.28	20.05	3.40	20.56	-115.58	OK	NE	0.01	0.40	0.39	0.26	
RE*AUBURN3	R18H-73	R18H-72	72	0.013	131.00	131.10	499	-0.0002			0.0021	0%		16.78		18.95		20.05		20.56	20.56	39	2010	0.03	-0.10	-0.13	-0.13	ignore
RE*AUBURN3	R18H-72	R18H-71	72	0.013	131.10	130.80	500	0.0006	3.68	67.1	0.0021	0%		16.78		18.95		20.05		20.56	-46.55	OK	NE					
RE*AUBURN3	R18H-71	R18H-70	72	0.013	130.80	130.60	365	0.0005	3.52	64.1	0.0021	0%		16.78		18.95		20.05		20.56	-43.57	OK	NE					
RE*AUBURN3	R18H-70	R18H-69	72	0.013	130.60	130.50	363	0.0003	2.49	45.5	0.0021	0%		16.78		18.95		20.05		20.56	-24.92	OK	NE					
RE*AUBURN3	R18H-69	R18H-68	72	0.013	130.50	130.30	84	0.0024	7.33	133.7	0.0021	0%		16.78		18.95		20.05		20.56	-113.13	OK	NE					
RE*AUBURN3	R18H-68	R18H-67	72	0.013	130.30	130.10	421	0.0005	3.27	59.7	0.0021	0%		16.78		18.95		20.05		20.56	-39.16	OK	NE					
RE*AUBURN3	R18H-67	R18H-66	72	0.013	130.10	129.80	489	0.0006	3.72	67.9	0.0021	0%		16.78		18.95		20.05		20.56	-47.30	OK	NE					
RE*AUBURN3	R18H-66	R18H-65	72	0.013	129.80	129.20	489	0.0012	5.26	96.0	0.0021	0%		16.78		18.95		20.05		20.56	-75.41	OK	NE					
											0.0021	100% WEST VALLEY	4.29	21.07	4.64	23.59	4.89	24.94	4.94	25.50			X					
											0.0021	0%		21.07		23.59		24.94		25.50			X					
RE*AUBURN3	R18H-65	R18H-64	72	0.013	129.20	128.90	610	0.0005	3.33	60.8	0.0021	0%		21.07		23.59		24.94		25.50	-35.26	OK	NE					
RE*AUBURN3	R18H-64	R18H-63	72	0.013	128.90	128.60	612	0.0005	3.33	60.7	0.0021	0%		21.07		23.59		24.94		25.50	-35.16	OK	NE					
RE*AUBURN3	R18H-63	R18H-62	72	0.013	128.60	128.50	87	0.0011	5.09	92.9	0.0021	0%		21.07		23.59		24.94		25.50	-67.39	OK	NE					
RE*AUBURN3	R18H-62	R18H-61	72	0.013	128.50	128.30	275	0.0007	4.05	73.9	0.0021	0%		21.07		23.59		24.94		25.50	-48.39	OK	NE					
RE*AUBURN3	R18H-61	R18H-59	72	0.013	128.30	127.90	556	0.0007	4.03	73.5	0.0021	0%		21.07		23.59		24.94		25.50	-47.99	OK	NE					
RE*AUBURN3	R18H-59	R18H-58	72	0.013	127.90	127.50	460	0.0009	4.43	80.8	0.0021	0%		21.07		23.59		24.94		25.50	-55.29	OK	NE					
	Section*		72	0.013		3.90	5972	0.0007	**3.84**	**70.0**	**0.0007**	0%		21.07		23.59		24.94		25.50	-44.52	OK	NE					OK
												0%		21.07		23.59		24.94		25.50			X					
												0%		21.07		23.59		24.94		25.50			X					
												50% aub3-nw	0.75	21.82	0.88	24.47	0.93	25.86	0.94	26.43			X					
RE*AUBURN3	R18H-58	R18H-57	72	0.013	127.46	127.63	82	-0.0021			0.0006	0%		21.82		24.47		25.86		26.43	26.43	54	2010	0.01	-0.17	-0.18	-0.18	ignore
RE*AUBURN3	R18H-57	R18H-56	72	0.013	127.60	127.10	582	0.0009	4.40	80.3	0.0006	0%		21.82		24.47		25.86		26.43	-53.87	OK	NE					
RE*AUBURN3	R18H-56	R18H-55	72	0.013	127.10	126.80	525	0.0006	3.59	65.5	0.0006	0%		21.82		24.47		25.86		26.43	-39.06	OK	NE					
RE*AUBURN3	R18H-55	R18H-54	72	0.013	126.80	126.50	513	0.0006	3.63	66.3	0.0006	0%		21.82		24.47		25.86		26.43	-39.82	OK	NE					
RE*AUBURN3	R18H-54	R18H-53	72	0.013	126.50	126.10	515	0.0008	4.19	76.4	0.0006	0%		21.82		24.47		25.86		26.43	-49.92	OK	NE					
RE*AUBURN3	R18H-53	R18H-52	72	0.013	126.10	125.80	578	0.0005	3.42	62.4	0.0006	0%		21.82		24.47		25.86		26.43	-35.98	OK	NE					
RE*AUBURN3	R18H-52	R18H-51	72	0.013	125.80	125.50	530	0.0006	3.57	65.2	0.0006	0%		21.82		24.47		25.86		26.43	-38.75	OK	NE					
RE*AUBURN3	R18H-51	R18H-50	72	0.013	125.50	125.00	530	0.0009	4.61	84.1	0.0006	0%		21.82		24.47		25.86		26.43	-57.72	OK	NE					
RE*AUBURN3	R18H-50	R18H-49	72	0.013	125.00	124.70	311	0.0010	4.66	85.1	0.0006	0%		21.82		24.47		25.86		26.43	-58.66	OK	NE					
RE*AUBURN3	R18H-49	R18H-48	72	0.013	124.70	124.50	1000	0.0002	2.12	38.7	0.0006	0%		21.82		24.47		25.86		26.43	-12.31	OK	NE					OK
	Section*		72	0.013		2.96	5166	0.0006	**3.60**	**65.6**	**0.0006**	0%		21.82		24.47		25.86		26.43	-39.15	OK	NE					OK
														47.59		**55.12**		**58.04**		**59.18**	**CHECK**							

*RWSP pipe or section data revised.

AUBURN PLANNING ZONE
TASK 250 REROUTING ALTERNATIVE
I/I HELD TO 1,100 GPAD ON NEW CONSTRUCTION

APPENDIX 250-C

KENT PLANNING ZONE PARALLEL ALTERNATIVE FLOW ROUTING WITH I/I HELD TO 1,100 GPAD ON NEW CONSTRUCTION

Task 250 Report:
KENT PLANNING ZONE - PARALLEL PIPE ALTERNATIVE
I&I LIMITED TO 1,100 GPAD ON NEW CONSTRUCTION

FACILITY	UP-STREAM MH #	DOWN-STREAM MH #	DIA (IN)	Manning n	UP-STREAM INV ELEV	DOWN-STREAM INV ELEV	LENGTH (FT.)	SLOPE (FT/FT)	Vfull (FPS)	Cap. (MGD)	Herrera New Slope	Modification Origin of Flow (%)	2010 Design Flow 2010 Inflow (MGD)	2010 Design Flow Total (MGD)	2020 Design Flow 2020Inflow (MGD)	2020 Design Flow Total (MGD)	2030 Design Flow 2030 Inflow (MGD)	2030 Design Flow Total (MGD)	2050 Design Flow 2050 Inflow (MGD)	2050 Design Flow Total (MGD)	Excess (MGD)	2050 Parallel Pipe (in.)	Decade Exceeded	Surcharge: any negative value in "BW elev" Δ elev FULL pipe	Δ elev	Δ– Δfull	BW elev (ft)	Proposed Diameter (inches)
do not delete this line																												
												100% AUBURN3-BASE	47.59	47.59	55.12	55.12	58.04	58.04	59.18	59.18			X					
RE*AUBURN3	R18H-48	R18H-47	72	0.013	124.5	123.70	659	0.0012	5.23	95.5	0.0007	0%		47.59		55.12		58.04		59.18	-36.3	OK	NE					
												100% S256TH CORR	18.42	66.01	23.87	78.98	24.87	82.91	25.44	84.62			X					
												100% S SOOS	2.68	68.69	4.18	83.16	4.36	87.27	4.57	89.19			X					
RE*AUBURN3	R18H-47	R18H-45	72	0.013	123.7	123.30	827	0.0005	3.30	60.3	0.0007	0%		68.69		83.16		87.27		89.19	28.9	51	2010					
RE*AUBURN3	R18H-45	R18H-44	72	0.013	123.3	123.20	454	0.0002	2.23	40.7	0.0007	10% aub2-s	0.24	68.92	0.34	83.50	0.35	87.62	0.36	89.55	48.9	63	2010					
RE*AUBURN3	R18H-44	R18H-43	72	0.013	123.2	122.90	592	0.0005	3.38	61.7	0.0007	0%		68.92		83.50		87.62		89.55	27.9	51	2010					
RE*AUBURN3	R18H-43	R18H-42	72	0.013	122.9	122.40	575	0.0009	4.43	80.8	0.0007	0%		68.92		83.50		87.62		89.55	8.8	33	2020					
	Section		72	0.013		2.30	3107	0.0007		74.5	0.0007	0%		68.92		83.50		87.62		89.55	15.0	42	2020					42
RE*AUBURN2	R18H-42	R18H-41	72	0.013	122.4	122.00	575	0.0007	3.96	72.3	0.0007	68% aub2-s	1.61	70.53	2.30	85.80	2.39	90.01	2.48	92.03	19.8	45	2020					
RE*AUBURN2	R18H-41	R18H-40	72	0.013	122.0	121.60	575	0.0007	3.96	72.3	0.0007	0%		70.53		85.80		90.01		92.03	19.8	45	2020					
RE*AUBURN2	R18H-40	R18H-39	72	0.013	121.6	121.10	518	0.0010	4.67	85.1	0.0007	0%		70.53		85.80		90.01		92.03	6.9	30	2020					
RE*AUBURN2	R18H-39	R18H-38	72	0.013	121.1	120.80	570	0.0005	3.45	62.9	0.0007	0%		70.53		85.80		90.01		92.03	29.2	51	2010					
RE*AUBURN2	R18H-38	R18H-37	72	0.013	120.8	120.20	610	0.0010	4.71	85.9	0.0007	22% aub2-s	0.52	71.05	0.74	86.55	0.77	90.78	0.80	92.83	6.9	30	2020					
RE*AUBURN2	R18H-37*	R18H-36	72	0.013	120.2	119.51	610	0.0011	5.05	92.1	0.0007	0%		71.05		86.55		90.78		92.83	0.7	15	2050					
RE*AUBURN2	R18H-36*	R18H-35	72	0.013	119.5	119.56	155	-0.0003			0.0007	0%		71.05		86.55		90.78		92.83	92.8	81	2010					
	Section*		72	0.013		2.84	3613	0.0008		76.8	0.0008	0%		71.05		86.55		90.78		92.83	16.0	42	2020					42
RE*AUBURN2 SIPHON	R18H-35*	R18H-34	54	0.013	119.56	118.40	200	0.0058	64%	96.9		0%		16.31		31.81		36.04		38.09	-58.8		NE					
RE*AUBURN2 SIPHON	R18H-35*	R18H-34	42	0.013	119.56	118.40	200	0.0058	33%	49.6		0%		49.57		49.57		49.57		49.57			NE					
RE*AUBURN2 SIPHON	R18H-35*	R18H-34	18	0.013	119.56	118.40	200	0.0058	3%	5.2		0%		5.17		5.17		5.17		5.17			NE					
	Section*		64	0.013	119.56	118.40	200					0%		71.05		86.55		90.78		92.83	92.8	OK	NE	ok				OK
RE*AUBURN2	R18H-34	R18H-33	72	0.013	118.4	118.30	186	0.0005	3.48	63.5	0.0008	70% aub2-n	1.76	72.81	1.88	88.43	2.00	92.78	2.03	94.86	31.3	54	2010					
RE*AUBURN2	R18H-33	R18H-32	72	0.013	118.3	117.90	535	0.0007	4.11	74.9	0.0008	0%		72.81		88.43		92.78		94.86	20.0	45	2020					
RE*AUBURN2	R18H-32	R18H-31	72	0.013	117.9	117.50	517	0.0008	4.18	76.2	0.0008	0%		72.81		88.43		92.78		94.86	18.7	45	2020					
RE*AUBURN2	R18H-31	R18H-30	72	0.013	117.5	117.10	518	0.0008	4.17	76.1	0.0008	0%		72.81		88.43		92.78		94.86	18.7	45	2020					
RE*AUBURN2	R18H-30	R18H-29	72	0.013	117.1	116.40	517	0.0014	5.53	100.8	0.0008	0%		72.81		88.43		92.78		94.86	-5.9	OK	NE					
RE*AUBURN2	R18H-29	R18H-28	72	0.013	116.4	115.90	517	0.0010	4.67	85.2	0.0008	0%		72.81		88.43		92.78		94.86	9.7	36	2020					
RE*AUBURN2 @SR516	R18H-28	R18H-27	72	0.013	115.9	116.10	220	-0.0009			0.0008	0%		72.81		88.43		92.78		94.86	94.9	81	2010					
RE*AUBURN2 @SR516	R18H-27	R18H-26	72	0.013	116.1	115.90	179	0.0011	5.02	91.6	0.0008	30% aub2-n	0.75	73.56	0.81	89.23	0.86	93.64	0.87	95.74	4.2	27	2030					
RE*AUBURN2	R18H-26	R18H-25	72	0.013	115.9	115.70	416	0.0005	3.29	60.1	0.0008	0%		73.56		89.23		93.64		95.74	35.7	57	2010					
RE*AUBURN2	R18H-25	R18H-24	72	0.013	115.7	114.40	736	0.0018	6.31	115.1	0.0008	0%		73.56		89.23		93.64		95.74	-19.4	OK	NE					
RE*AUBURN2	R18H-24	R18H-23	72	0.013	114.4	114.70	116	-0.0026			0.0008	0%		73.56		89.23		93.64		95.74	95.7	81	2010					
RE*AUBURN2	R18H-23	R18H-22	72	0.013	114.7	114.50	577	0.0003	2.80	51.0	0.0008	0%		73.56		89.23		93.64		95.74	44.7	60	2010					
	Section		72	0.013		3.90	5034	0.0008		76.3	0.0008	0%		73.56		89.23		93.64		95.74	19.5	45	2020					45
RE*AUBURN1	R18H-22	R18H-21A	72	0.013	114.5	114.20	410	0.0007	4.06	74.1	0.0008	0%		73.56		89.23		93.64		95.74	21.6	45	2020					
RE*AUBURN1	R18H-21A	R18H-21	72	0.013	114.2	113.90	410	0.0007	4.06	74.1	0.0008	0%		73.56		89.23		93.64		95.74	21.6	45	2020					
RE*AUBURN1	R18H-21	R18H-19	72	0.013	113.9	113.60	492	0.0006	3.71	67.7	0.0008	0%		73.56		89.23		93.64		95.74	28.1	51	2010					
RE*AUBURN1 @SR 167	R18H-19	R18H-18	72	0.013	113.6	113.20	260	0.0015	5.89	107.5	0.0008	0%		73.56		89.23		93.64		95.74	-11.7	OK	NE					
RE*AUBURN1	R18H-18	R18H-17	72	0.013	113.2	112.90	260	0.0012	5.10	93.1	0.0008	0%		73.56		89.23		93.64		95.74	2.7	21	2030					
RE*AUBURN1	R18H-17	R18H-16	72	0.013	112.9	112.50	468	0.0009	4.39	80.1	0.0008	0%		73.56		89.23		93.64		95.74	15.6	42	2020					
RE*AUBURN1	R18H-16	R18H-15	72	0.013	112.5	112.20	413	0.0007	4.05	73.8	0.0008	0%		73.56		89.23		93.64		95.74	21.9	45	2020					
RE*AUBURN1	R18H-15	R18H-14	72	0.013	112.2	111.90	546	0.0005	3.52	64.2	0.0008	25% xval-x	0.29	73.85	0.30	89.54	0.32	93.96	0.32	96.06	31.8	54	2010					
RE*AUBURN1	R18H-14	R18H-13	72	0.013	111.9	111.50	540	0.0007	4.09	74.6	0.0008	0%		73.85		89.54		93.96		96.06	21.5	45	2020					
RE*AUBURN1	R18H-13	R18H-12	72	0.013	111.5	111.00	530	0.0009	4.61	84.1	0.0008	0%		73.85		89.54		93.96		96.06	11.9	36	2020					
RE*AUBURN1	R18H-12	R18H-11	72	0.013	111	110.50	655	0.0008	4.15	75.7	0.0008	0%		73.85		89.54		93.96		96.06	20.4	45	2020					
RE*AUBURN1	R18H-11	R18H-10	72	0.013	110.5	110.00	640	0.0008	4.20	76.6	0.0008	0%		73.85		89.54		93.96		96.06	19.5	45	2020					
RE*AUBURN1	R18H-10	R18H-09	72	0.013	110	109.60	398	0.0010	4.76	86.9	0.0008	0%		73.85		89.54		93.96		96.06	9.2	33	2020					
RE*AUBURN1	R18H-09	R18H-08	72	0.013	109.6	109.40	112	0.0018	6.35	115.8	0.0008	100% xval-s	0.41	74.26	0.43	89.97	0.46	94.42	0.46	96.52	-19.3	OK	NE					
RE*AUBURN1	R18H-08	R18H-07	72	0.013	109.4	109.10	629	0.0005	3.28	59.8	0.0008	0%		74.26		89.97		94.42		96.52	36.7	57	2010					

Task 250 Report:
KENT PLANNING ZONE - PARALLEL PIPE ALTERNATIVE
I&I LIMITED TO 1,100 GPAD ON NEW CONSTRUCTION

FACILITY	UP-STREAM MH #	DOWN-STREAM MH #	DIA (IN)	Manning n	UP-STREAM INV ELEV	DOWN-STREAM INV ELEV	LENGTH (FT.)	SLOPE (FT/FT)	Vfull (FPS)	Cap. (MGD)	Herrera New Slope	Modification Origin of Flow (%)	2010 Design Flow 2010 Inflow (MGD)	2010 Design Flow Total (MGD)	2020 Design Flow 2020Inflow (MGD)	2020 Design Flow Total (MGD)	2030 Design Flow 2030 Inflow (MGD)	2030 Design Flow Total (MGD)	2050 Design Flow 2050 Inflow (MGD)	2050 Design Flow Total (MGD)	Excess (MGD)	2050 Parallel Pipe (in.)	Decade Exceeded	Surcharge: any negative value in "BW elev" Δ elev FULL pipe	Δ elev	Δ− Δfull	BW elev (ft)	Proposed Diameter (inches)
RE*AUBURN1	R18H-07	R18H-06	72	0.013	109.1	108.60	629	0.0008	4.23	77.2	0.0008	0%		74.26		89.97		94.42		96.52	19.3	45	2020					
RE*AUBURN1	R18H-06	R18H-05	72	0.013	108.6	108.00	534	0.0011	5.03	91.8	0.0008	0%		74.26		89.97		94.42		96.52	4.7	27	2030					
RE*AUBURN1	R18H-05	R18H-04	72	0.013	108	107.50	565	0.0009	4.47	81.5	0.0008	0%		74.26		89.97		94.42		96.52	15.0	39	2020					
RE*AUBURN1	R18H-04	R18H-03	72	0.013	107.5	107.20	494	0.0006	3.70	67.5	0.0008	0%		74.26		89.97		94.42		96.52	29.0	51	2010					
RE*AUBURN1	R18H-03	R18H-02	72	0.013	107.2	106.80	520	0.0008	4.17	76.0	0.0008	0%		74.26		89.97		94.42		96.52	20.5	45	2020					
RE*AUBURN1	R18H-02	R18H-01	72	0.013	106.8	106.40	520	0.0008	4.17	76.0	0.0008	0%		74.26		89.97		94.42		96.52	20.5	45	2020					
	Section		72	0.013		8.10	10025	0.0008		77.9	0.0008	0%		74.26		89.97		94.42		96.52	18.6	45	2020					45
RE*AUBURN1	R18H-01	R18G-01A	60	0.013	106.4	105.90	36	0.0139	15.67	198.6	0.0026	25% xval-x	**0.29**	74.54	**0.30**	90.28	**0.32**	94.74	**0.32**	96.84	-101.7	OK	NE					
RE*KENTX	R18G-01A	R18G-01	72	0.013	104	103.80	635	0.0003	2.67	48.6	0.0026	-35% AUBURN1-SPLIT	**-26.09**	48.45	**-31.60**	58.68	**-33.16**	61.58	**-33.90**	62.95	14.3	33	2020					
RE*KENTX	R18G-01	52	72	0.013	103.8	103.70	353	0.0003	2.53	46.1	0.0026	0%		48.45		58.68		61.58		62.95	16.8	33	2010					
	Section		72	0.013		2.70	1024	0.0026		140.7	0.0026	0%		48.45		58.68		61.58		62.95	-77.7	OK	NE					OK
TO ULID1/5#52																												

Task 250 Report:
KENT PLANNING ZONE - PARALLEL PIPE ALTERNATIVE
I&I LIMITED TO 1,100 GPAD ON NEW CONSTRUCTION

FACILITY	UP-STREAM MH #	DOWN-STREAM MH #	DIA (IN)	Manning n	UP-STREAM INV ELEV	DOWN-STREAM INV ELEV	LENGTH (FT.)	SLOPE (FT/FT)	Vfull (FPS)	Cap. (MGD)	Herrera New Slope	Modification Origin of Flow (%)	2010 Design Flow 2010 Inflow (MGD)	2010 Design Flow Total (MGD)	2020 Design Flow 2020Inflow (MGD)	2020 Design Flow Total (MGD)	2030 Design Flow 2030 Inflow (MGD)	2030 Design Flow Total (MGD)	2050 Design Flow 2050 Inflow (MGD)	2050 Design Flow Total (MGD)	Excess (MGD)	2050 Parallel Pipe (in.)	Decade Exceeded	Surcharge: any negative value in "BW elev" Δ elev FULL pipe	Δ elev	Δ−Δfull	BW elev (ft)	Proposed Diameter (inches)
do not delete this line												0%																
RE*WHILL	15	14	24	0.013	155.3	153.30	221	0.0090	6.87	13.9	0.0061	100% whill-x	5.63	5.63	6.31	6.31	6.66	6.66	6.77	6.77	-7.1	OK	NE					
RE*WHILL	14	13	24	0.013	153.3	146.20	249	0.0285	12.19	24.7	0.0061	0%		5.63		6.31		6.66		6.77	-17.9	OK	NE	0.5	7.1	6.6	6.5	
RE*WHILL	13	12	24	0.013	146.2	145.40	286	0.0028	3.82	7.7	0.0061	0%		5.63		6.31		6.66		6.77	-1.0	OK	NE	0.6	0.8	0.2	-0.1	ignore
RE*WHILL	12	11	24	0.013	145.4	144.60	514	0.0016	2.85	5.8	0.0061	0%		5.63		6.31		6.66		6.77	1.0	12	2020	1.1	0.8	-0.3	-0.3	ignore
RE*WHILL	11	10	24	0.013	144.6	144.40	95	0.0021	3.31	6.7	0.0061	0%		5.63		6.31		6.66		6.77	0.1	6	2050	0.2	0.2	0.0	0.0	ignore
RE*WHILL	10	09	24	0.013	144.4	143.50	222	0.0041	4.60	9.3	0.0061	0%		5.63		6.31		6.66		6.77	-2.5	OK	NE					
RE*WHILL	09	08	24	0.013	143.5	142.30	305	0.0039	4.53	9.2	0.0061	0%		5.63		6.31		6.66		6.77	-2.4	OK	NE					
RE*WHILL	08	07	24	0.013	142.3	140.00	344	0.0067	5.90	12.0	0.0061	0%		5.63		6.31		6.66		6.77	-5.2	OK	NE					
RE*WHILL	07	06A	24	0.013	140	131.20	500	0.0176	9.58	19.4	0.0061	0%		5.63		6.31		6.66		6.77	-12.6	OK	NE					
RE*WHILL	06A*	06B	24	0.013	131.2	131.10	15	0.0067	5.90	11.9	0.0061	0%		5.63		6.31		6.66		6.77	-5.2	OK	NE					
RE*WHILL	06B*	06	24	0.013	131.1	130.40	335	0.0021	3.30	6.7	0.0061	0%		5.63		6.31		6.66		6.77	0.1	6	2050	0.7	0.7	0.0	-0.2	ignore
RE*WHILL	06	05	24	0.013	130.4	129.70	350	0.0020	3.23	6.5	0.0061	0%		5.63		6.31		6.66		6.77	0.2	6	2030	0.7	0.7	0.0	-0.2	ignore
RE*WHILL	05	04	24	0.013	129.7	128.70	500	0.0020	3.23	6.5	0.0061	0%		5.63		6.31		6.66		6.77	0.2	6	2030	1.1	1.0	-0.1	-0.1	ignore
RE*WHILL	04	03	24	0.013	128.7	127.90	410	0.0020	3.19	6.5	0.0061	0%		5.63		6.31		6.66		6.77	0.3	9	2030	0.9	0.8	-0.1	-0.1	ignore
RE*WHILL	03	02	24	0.013	128.9	127.00	413	0.0046	4.90	9.9	0.0061	0%		5.63		6.31		6.66		6.77	-3.2	OK	NE					
RE*WHILL	02	01A	24	0.013	127	126.50	240	0.0021	3.29	6.7	0.0061	50% ulid4-x	1.11	6.75	1.22	7.52	1.29	7.95	1.30	8.08	1.4	12	2010	0.7	0.5	-0.2	-0.4	ignore
RE*WHILL	01A	01	24	0.013	126.5	126.40	96	0.0010	2.33	4.7	0.0061	0%		6.75		7.52		7.95		8.08	3.4	18	2010	0.3	0.1	-0.2	-0.2	ignore
RE*WHILL	01	S-31A	24	0.013	126.4	125.70	40	0.0175	9.55	19.4	0.0061	0%		6.75		7.52		7.95		8.08	-11.3	OK	NE					
RE*WHILL	S-31A	S-31B	24	0.013	125.7	125.50	294	0.0007	1.88	3.8	0.0061	0%		6.75		7.52		7.95		8.08	4.3	18	2010	0.9	0.2	-0.7	-0.7	ignore
	Section*		24	0.013		29.80	5429	0.0055		10.8	0.0055	0%		6.75		7.52		7.95		8.08	-2.8	OK	NE					OK
RE*WHILL	S-31B	S-31	24	0.013	125.5	122.30	14	0.2286	34.52	70.0	0.0061	0%		6.75		7.52		7.95		8.08	-61.9	OK	NE					
RE*ULID1/4	S-31	S-30	24	0.013	122.3	121.50	448	0.0018	3.05	6.2	0.0015	0%		6.75		7.52		7.95		8.08	1.9	18	2010					
RE*ULID1/4	S-30	S-29	24	0.013	121.5	120.00	454	0.0033	4.15	8.4	0.0015	5% ulid4-x	0.11	6.86	0.12	7.65	0.13	8.08	0.13	8.21	-0.2	OK	NE					
RE*ULID1/4	S-29	S-28	24	0.013	120	119.90	443	0.0002	1.09	2.2	0.0015	0%		6.86		7.65		8.08		8.21	6.0	27	2010					
RE*ULID1/4	S-28	S-27	24	0.013	119.9	119.10	446	0.0018	3.06	6.2	0.0015	30% ulid4-x	0.67	7.53	0.73	8.38	0.77	8.85	0.78	8.99	2.8	21	2010					
RE*ULID1/4	S-27	S-26	24	0.013	119.1	118.10	463	0.0022	3.35	6.8	0.0015	0%		7.53		8.38		8.85		8.99	2.2	18	2010					
RE*ULID1/4	S-26	S-25	24	0.013	118.1	117.30	405	0.0020	3.21	6.5	0.0015	0%		7.53		8.38		8.85		8.99	2.5	18	2010					
RE*ULID1/4	S-25	S-24	24	0.013	117.3	116.70	285	0.0021	3.31	6.7	0.0015	0%		7.53		8.38		8.85		8.99	2.3	18	2010					
RE*ULID1/4	S-24	S-23	24	0.013	116.7	115.90	353	0.0023	3.44	7.0	0.0015	0%		7.53		8.38		8.85		8.99	2.0	18	2010					
	Section		24	0.013		6.40	3297	0.0019		6.4	0.0019	0%		7.53		8.38		8.85		8.99	2.5	18	2010					18
RE*ULID1/4	S-23	S-22	30	0.013	115.9	115.30	348	0.0017	3.48	11.0	0.0015	15% ulid4-x	0.33	7.86	0.36	8.74	0.39	9.24	0.39	9.38	-1.6	OK	NE					
RE*ULID1/4	S-22	S-20	30	0.013	115.3	115.00	409	0.0007	2.27	7.2	0.0015	0%		7.86		8.74		9.24		9.38	2.2	18	2010					
RE*ULID1/4	S-20	S-19	30	0.013	115	114.70	320	0.0009	2.56	8.1	0.0015	0%		7.86		8.74		9.24		9.38	1.3	15	2020					
RE*ULID1/4	S-19	S-18	30	0.013	114.7	114.50	201	0.0010	2.64	8.4	0.0015	20% 250s-x	0.60	8.46	0.67	9.41	0.70	9.94	0.71	10.09	1.7	18	2010					
RE*ULID1/4	S-18	S-17	30	0.013	114.5	114.20	185	0.0016	3.37	10.7	0.0015	0%		8.46		9.41		9.94		10.09	-0.6	OK	NE					
	Section		30	0.013		1.70	1463	0.0012		9.0	0.0012	0%		8.46		9.41		9.94		10.09	1.0	15	2020					15
RE*ULID250	S-17	S-16	30	0.013	114.2	114.00	290	0.0007	2.20	7.0	0.0015	0%		8.46		9.41		9.94		10.09	3.1	21	2010					
RE*ULID250	S-16	S-15A	30	0.013	114	113.60	500	0.0008	2.37	7.5	0.0015	0%		8.46		9.41		9.94		10.09	2.6	18	2010					
RE*ULID250	S-15	S-14	30	0.013	113.6	113.10	502	0.0010	2.64	8.4	0.0015	0%		8.46		9.41		9.94		10.09	1.7	18	2010					
RE*ULID250	S-14	S-13	30	0.013	113.1	112.60	500	0.0010	2.65	8.4	0.0015	0%		8.46		9.41		9.94		10.09	1.7	18	2010					
RE*ULID250	S-13	S-12	30	0.013	112.6	112.20	500	0.0008	2.37	7.5	0.0015	0%		8.46		9.41		9.94		10.09	2.6	18	2010					
RE*ULID250	S-12	S-11	30	0.013	112.2	111.40	324	0.0025	4.16	13.2	0.0015	0%		8.46		9.41		9.94		10.09	-3.1	OK	NE					
RE*ULID250	S-11	S-10	30	0.013	111.4	111.30	440	0.0002	1.26	4.0	0.0015	0%		8.46		9.41		9.94		10.09	6.1	27	2010					
	Section		30	0.013		2.90	3056	0.0009		8.2	0.0015	0%		8.46		9.41		9.94		10.09	1.9	18	2010					18
RE*ULID250	S-10	S-09	36	0.013	111.3	111.10	445	0.0004	2.01	9.1	0.0015	0%		8.46		9.41		9.94		10.09	0.9	15	2020	0.2	0.2	0.0	-0.2	ignore
RE*ULID250	S-09	S-08	36	0.013	111.1	110.90	446	0.0004	2.00	9.1	0.0015	0%		8.46		9.41		9.94		10.09	1.0	15	2020	0.2	0.2	0.0	-0.1	ignore
RE*ULID250	S-08	S-07	36	0.013	110.9	110.80	350	0.0003	1.60	7.3	0.0015	0%		8.46		9.41		9.94		10.09	2.8	21	2010	0.2	0.1	-0.1	-0.1	ignore
RE*ULID250	S-07	S-06	36	0.013	110.8	110.50	497	0.0006	2.32	10.6	0.0015	0%		8.46		9.41		9.94		10.09	-0.5	OK	NE					
	Section*		36	0.013		0.80	1738	0.0005	2.03	9.3	0.0015	0%		8.46		9.41		9.94		10.09	0.8	12	2020					ok
RE*ULID250	S-06	S-05	36	0.013	110.5	110.20	305	0.0010	2.97	13.5	0.0015	0%		8.46		9.41		9.94		10.09	-3.4	OK	NE	0.2	0.3	0.1	0.1	ignore
RE*ULID250	S-05	S-04A	36	0.013	110.2	110.10	255	0.0004	1.87	8.5	0.0015	0%		8.46		9.41		9.94		10.09	1.5	15	2020	0.1	0.1	0.0	0.0	ignore
RE*ULID250	S-04A	S-03	36	0.013	110.1	109.60	430	0.0012	3.23	14.7	0.0015	80% 250s-x	2.41	10.87	2.67	12.08	2.81	12.75	2.84	12.93	-1.8	OK	NE					
RE*ULID250	S-03	S-02	36	0.013	109.6	109.00	432	0.0014	3.53	16.1	0.0015	0%		10.87		12.08		12.75		12.93	-3.1	OK	NE					
RE*ULID250	S-02	S-01	36	0.013	109	108.40	455	0.0013	3.44	15.7	0.0015	0%		10.87		12.08		12.75		12.93	-2.7	OK	NE					
RE*ULID250	S-01	N-01	36	0.013	108.4	107.80	503	0.0012	3.27	14.9	0.0015	0%		10.87		12.08		12.75		12.93	-2.0	OK	NE					
RE*ULID250	N-01	N-02	36	0.013	107.8	105.90	525	0.0036	5.69	26.0	0.0015	0%		10.87		12.08		12.75		12.93	-13.0	OK	NE					
	Section*		36	0.013		4.60	2905	0.0016		17.2	0.0015	0%		10.87		12.08		12.75		12.93	-4.2	OK	NE					OK

KENT PLANNING ZONE
TASK 250 PARALLEL ALTERNATIVE
LIMITED I/I TO 1100 GPAD ON NEW CONSTRUCTION

Task 250 Report: KENT PLANNING ZONE - PARALLEL PIPE ALTERNATIVE I&I LIMITED TO 1,100 GPAD ON NEW CONSTRUCTION											Herrera	Modification	2010 Design Flow		2020 Design Flow		2030 Design Flow		2050 Design Flow					Surcharge: any negative value in "BW elev"				
FACILITY	UP-STREAM MH #	DOWN-STREAM MH #	DIA (IN)	Manning n	UP-STREAM INV ELEV	DOWN-STREAM INV ELEV	LENGTH (FT.)	SLOPE (FT/FT)	Vfull (FPS)	Cap. (MGD)	New Slope	Origin of Flow (%)	2010 Inflow (MGD)	Total (MGD)	2020Inflow (MGD)	Total (MGD)	2030 Inflow (MGD)	Total (MGD)	2050 Inflow (MGD)	Total (MGD)	Excess (MGD)	2050 Parallel Pipe (in.)	Decade Exceeded	Δ elev FULL pipe	Δ elev	Δ− Δfull	BW elev (ft)	Proposed Diameter (inches)
TO ULID 250 #N-02																												

Task 250 Report:
KENT PLANNING ZONE - PARALLEL PIPE ALTERNATIVE
I&I LIMITED TO 1,100 GPAD ON NEW CONSTRUCTION

FACILITY	UP-STREAM MH #	DOWN-STREAM MH #	DIA (IN)	Manning n	UP-STREAM INV ELEV	DOWN-STREAM INV ELEV	LENGTH (FT.)	SLOPE (FT/FT)	Vfull (FPS)	Cap. (MGD)	Herrera New Slope	Modification Origin of Flow (%)	2010 Design Flow 2010 Inflow (MGD)	2010 Design Flow Total (MGD)	2020 Design Flow 2020Inflow (MGD)	2020 Design Flow Total (MGD)	2030 Design Flow 2030 Inflow (MGD)	2030 Design Flow Total (MGD)	2050 Design Flow 2050 Inflow (MGD)	2050 Design Flow Total (MGD)	Excess (MGD)	2050 Parallel Pipe (in.)	Decade Exceeded	Surcharge: any negative value in "BW elev" Δ elev FULL pipe	Δ elev	Δ−Δfull	BW elev (ft)	Proposed Diameter (inches)
do not delete this line												0%											X					
RE*ULID250	N-06G	N-06F	15	0.013	113.7	112.50	151	0.0079	4.70	3.7	0.0017	80% 250n-x	2.49	2.49	3.06	3.06	3.18	3.18	3.20	3.20	-0.5	OK	NE					
RE*ULID250	N-06F	N-06E	27	0.013	112.5	110.70	455	0.0040	4.91	12.6	0.0017	0%		2.49		3.06		3.18		3.20	-9.4	OK	NE					
RE*ULID250	N-06E	N-06D	27	0.013	110.7	108.40	451	0.0051	5.58	14.3	0.0017	10% 250n-x	0.31	2.80	0.38	3.44	0.40	3.57	0.40	3.60	-10.7	OK	NE					
Section*			27	0.013		5.30	1057	0.0050		14.2	0.0050	0%		2.80		3.44		3.57		3.60	-10.6	OK	NE					OK
RE*ULID250	N-06D	N-06C	36	0.013	108.4	108.20	387	0.0005	2.15	9.8	0.0017	0%		2.80		3.44		3.57		3.60	-6.2	OK	NE					
RE*ULID250	N-06C	N-06B	36	0.013	108.2	108.10	282	0.0004	1.78	8.1	0.0017	0%		2.80		3.44		3.57		3.60	-4.5	OK	NE					
RE*ULID250	N-06B	N-06A	36	0.013	108.1	107.90	327	0.0006	2.34	10.7	0.0017	0%		2.80		3.44		3.57		3.60	-7.1	OK	NE					
RE*ULID250	N-06A	N-06	36	0.013	107.9	107.80	422	0.0002	1.46	6.6	0.0017	0%		2.80		3.44		3.57		3.60	-3.0	OK	NE					
RE*ULID250	N-06	N-05	36	0.013	107.8	107.70	180	0.0006	2.23	10.2	0.0017	0%		2.80		3.44		3.57		3.60	-6.6	OK	NE					
RE*ULID250	N-05	N-04	36	0.013	107.7	107.40	423	0.0007	2.52	11.5	0.0017	10% 250n-x	0.31	3.11	0.38	3.83	0.40	3.97	0.40	4.00	-7.5	OK	NE					
RE*ULID250	N-04	N-03	36	0.013	107.4	107.20	441	0.0005	2.01	9.2	0.0017	0%		3.11		3.83		3.97		4.00	-5.2	OK	NE					
RE*ULID250	N-03	N-02A	36	0.013	107.2	107.10	287	0.0003	1.77	8.1	0.0017	0%		3.11		3.83		3.97		4.00	-4.1	OK	NE					
Section*			36	0.013		1.30	2749	0.0005	2.06	9.4	0.0005	0%		3.11		3.83		3.97		4.00	-5.4	OK	NE					OK
RE*ULID250	N-02A	N-02	36	0.013	107.1	105.90	135	0.0089		40.7	0.0089	100% ULID250S	10.87	13.98	12.08	15.90	12.75	16.72	12.93	16.92	-23.8	OK	NE					
Section*			36	0.013		1.20	135	0.0089	8.92	40.7	0.0089	0%		13.98		15.90		16.72		16.92	-23.8	OK	NE					OK
RE*KENTX	R18G-07	R18G-06	54	0.013	106	105.60	625	0.0006	3.14	32.2	0.0007	25% xval-x	0.29	14.27	0.30	16.21	0.32	17.04	0.32	17.25	-14.9	OK	NE					
RE*KENTX	R18G-06	R18G-05	54	0.013	105.6	105.20	618	0.0006	3.15	32.4	0.0007	0%		14.27		16.21		17.04		17.25	-15.1	OK	NE					
RE*KENTX	R18G-05	R18G-04	54	0.013	105.2	105.40	74	-0.0027			0.0007	0%		14.27		16.21		17.04		17.25	17.2	42	2010					
RE*KENTX	R18G-04	R18G-03	54	0.013	105.4	105.00	619	0.0006	3.15	32.3	0.0007	0%		14.27		16.21		17.04		17.25	-15.1	OK	NE					
RE*KENTX to SI	R18G-03	R18A-57	54	0.013	105	104.10	664	0.0014	4.56	46.8	0.0007	0%		14.27		16.21		17.04		17.25	-29.6	OK	NE					
Section			54	0.013		1.90	2600	0.0007	3.35	34.4	0.0007	0%		14.27		16.21		17.04		17.25	-17.1	OK	NE					OK
TO SOUTH INTERCEPTOR																												

Task 250 Report:
KENT PLANNING ZONE - PARALLEL PIPE ALTERNATIVE
I&I LIMITED TO 1,100 GPAD ON NEW CONSTRUCTION

FACILITY	UP-STREAM MH #	DOWN-STREAM MH #	DIA (IN)	Manning n	UP-STREAM INV ELEV	DOWN-STREAM INV ELEV	LENGTH (FT.)	SLOPE (FT/FT)	Vfull (FPS)	Cap. (MGD)	Herrera New Slope	Modification Origin of Flow (%)	2010 Design Flow 2010 Inflow (MGD)	2010 Design Flow Total (MGD)	2020 Design Flow 2020Inflow (MGD)	2020 Design Flow Total (MGD)	2030 Design Flow 2030 Inflow (MGD)	2030 Design Flow Total (MGD)	2050 Design Flow 2050 Inflow (MGD)	2050 Design Flow Total (MGD)	Excess (MGD)	2050 Parallel Pipe (in.)	Decade Exceeded	Surcharge: any negative value in "BW elev" Δ elev FULL pipe	Δ elev	Δ−Δfull	BW elev (ft)	Proposed Diameter (inches)
do not delete this line												5% mill-x	0.55	0.55	0.61	0.61	0.65	0.65	0.67	0.67			X					
RE*GARISN	R18-30*	R18-29	24	0.013	378.04	377.67	110	0.0034	4.18	8.5	0.0553	70% gar-x	3.81	4.36	4.26	4.87	4.52	5.17	4.68	5.35	-3.1	OK	NE					
RE*GARISN	R18-29*	R18-28	12	0.013	377.67	347.35	206	0.1472	17.46	8.8	0.0553	0%		4.36		4.87		5.17		5.35	-3.5	OK	NE					
RE*GARISN	R18-28*	R18-27	12	0.013	347.35	326.23	195	0.1083	14.97	7.6	0.0553	0%		4.36		4.87		5.17		5.35	-2.2	OK	NE					
RE*GARISN	R18-27*	R18-26	12	0.013	326.23	302.19	152	0.1580	18.08	9.2	0.0553	0%		4.36		4.87		5.17		5.35	-3.8	OK	NE					
RE*GARISN	R18-26*	R18-25	12	0.013	302.19	276.30	335	0.0773	12.64	6.4	0.0553	0%		4.36		4.87		5.17		5.35	-1.1	OK	NE					
	Section*		12	0.013		101.74	999	0.1019		7.4	0.1019	0%		4.36		4.87		5.17		5.35	-2.0	OK	NE					OK
RE*GARISN	R18-25*	R18-24	18	0.013	275.59	273.89	325	0.0052	4.31	4.9	0.0553	0%		4.36		4.87		5.17		5.35	0.4	6	2030	2.0	1.7	-0.3	-0.7	ignore
RE*GARISN	R18-24*	R18-23	18	0.013	273.89	272.28	330	0.0049	4.16	4.7	0.0553	0%		4.36		4.87		5.17		5.35	0.6	6	2020	2.0	1.6	-0.4	-0.4	ignore
	Section*		18	0.013		3.31	655	0.0051		4.8	0.0051	0%		4.36		4.87		5.17		5.35	0.5	9	2020					ok
RE*GARISN	R18-23*	R18-22	12	0.013	272.28	254.65	235	0.0751	12.47	6.3	0.0553	10% gar-x	0.54	4.91	0.61	5.48	0.65	5.82	0.67	6.02	-0.3	OK	NE					
RE*GARISN	R18-22*	R18-21	12	0.013	254.65	223.41	210	0.1488	17.55	8.9	0.0553	0%		4.91		5.48		5.82		6.02	-2.9	OK	NE					
RE*GARISN	R18-21*	R18-20	12	0.013	219.39	202.44	69	0.2459	22.55	11.4	0.0553	0%		4.91		5.48		5.82		6.02	-5.4	OK	NE					
RE*GARISN	R18-20*	R18-19	12	0.013	202.44	190.27	97	0.1250	16.08	8.1	0.0553	0%		4.91		5.48		5.82		6.02	-2.1	OK	NE					
	Section*		12	0.013		82.01	611	0.1342		8.4	0.1342	0%		4.91		5.48		5.82		6.02	-2.4	OK	NE					OK
RE*GARISN	R18-19*	R18-18	15	0.013	190.27	188.11	202	0.0107	5.45	4.3	0.0553	0%		4.91		5.48		5.82		6.02	1.7	9	2010	4.2	2.2	-2.0	-2.0	9
RE*GARISN @ creek	R18-18*	R18-17	15	0.013	188.11	171.18	356	0.0475	11.51	9.1	0.0553	0%		4.91		5.48		5.82		6.02	-3.1	OK	NE					
	Section*		15	0.013		19.09	559	0.0342		7.7	0.0342	0%		4.91		5.48		5.82		6.02	-1.7	OK	NE					OK
RE*GARISN @ creek drop	R18-17*	R18-15	18	0.013	167.15	165.29	386	0.0048	4.14	4.7	0.0553	0%		4.91		5.48		5.82		6.02	1.3	9	2010	3.0	1.9	-1.2	-1.9	9
RE*GARISN @ creek	R18-15*	R18-14	18	0.013	165.29	163.34	339	0.0058	4.52	5.2	0.0553	0%		4.91		5.48		5.82		6.02	0.9	9	2020	2.7	1.9	-0.7	-0.7	ignore
RE*GARISN @ creek	R18-14*	R18-13	18	0.013	163.34	162.29	66	0.0159	7.51	8.6	0.0553	20% gar-x	1.09	5.99	1.22	6.70	1.29	7.11	1.34	7.36	-1.2	OK	NE					
	Section*		18	0.013		4.86	791	0.0061		5.3	0.0061	0%		5.99		6.70		7.11		7.36	2.0	15	2010					ok
RE*GARISN	R18-13*	R18-12A	24	0.013	161.7	161.47	101	0.0023	3.44	7.0	0.0553	0%		5.99		6.70		7.11		7.36	0.4	6	2030	0.3	0.2	0.0	-0.4	ignore
RE*GARISN	R18-12A*	R18-12	24	0.013	161.47	161.21	155	0.0017	2.96	6.0	0.0553	0%		5.99		6.70		7.11		7.36	1.4	9	2010	0.4	0.3	-0.1	-0.4	ignore
RE*GARISN	R18-12*	R18-11	24	0.013	161.21	160.79	259	0.0016	2.91	5.9	0.0553	0%		5.99		6.70		7.11		7.36	1.5	9	2010	0.7	0.4	-0.2	-0.2	ignore
	Section*		24	0.013		0.91	515	0.0018		6.2	0.0018	0%		5.99		6.70		7.11		7.36	1.2	15	2020					ok
RE*GARISN	R18-11*	R18-10	18	0.013	160.79	130.78	356	0.0842	17.30	19.7	0.0553	0%		5.99		6.70		7.11		7.36	-12.4	OK	NE					
RE*GARISN drop	R18-10*	R18-09	18	0.013	118.98	115.51	260	0.0133	6.88	7.8	0.0553	0%		5.99		6.70		7.11		7.36	-0.5	OK	NE					
	Section*		18	0.013		45.28	617	0.0734		18.4	0.0734	0%		5.99		6.70		7.11		7.36	-11.1	OK	NE					OK
RE*GARISN	R18-09*	R18-08	24	0.013	115.51	115.09	420	0.0010	2.29	4.6	0.0015	34% c5e-x	0.43	6.42	0.46	7.16	0.49	7.60	0.49	7.85	3.2	21	2010					
RE*GARISN	R18-08*	R18-07	24	0.013	115.09	114.54	413	0.0013	2.64	5.3	0.0015	0%		6.42		7.16		7.60		7.85	2.5	18	2010					
RE*GARISN	R18-07*	R18-06	24	0.013	114.54	114.29	94	0.0027	3.72	7.5	0.0015	0%		6.42		7.16		7.60		7.85	0.3	9	2030					
RE*GARISN	R18-06*	R18-04	24	0.013	114.29	114.42	134	-0.0010			0.0015	0%		6.42		7.16		7.60		7.85	7.9	30	2010					
RE*GARISN	R18-04*	R18-03	24	0.013	114.42	113.88	418	0.0013	2.59	5.3	0.0015	0%		6.42		7.16		7.60		7.85	2.6	18	2010					
RE*GARISN	R18-03*	R18-02A	24	0.013	113.84	113.39	350	0.0013	2.59	5.2	0.0015	0%		6.42		7.16		7.60		7.85	2.6	18	2010					
RE*GARISN	R18-02A*	R18-02	24	0.013	113.39	113.29	96	0.0010	2.33	4.7	0.0015	0%		6.42		7.16		7.60		7.85	3.1	21	2010					
RE*GARISN	R18-02*	R18-01	24	0.013	113.29	112.63	365	0.0018	3.07	6.2	0.0015	33% c5e-x	0.42	6.84	0.45	7.61	0.47	8.07	0.48	8.33	2.1	18	2010					
RE*GARISN	R18-01*	R18-57I-A	24	0.013	112.63	112.50	306	0.0004	1.49	3.0	0.0015	0%		6.84		7.61		8.07		8.33	5.3	24	2010					
RE*GARISN	R18-57I-A	57I	24	0.013	112.5	112.40	19	0.0053	5.24	10.6	0.0015	0%		6.84		7.61		8.07		8.33	-2.3	OK	NE					
	Section*		24	0.013		3.11	2614	0.0012		5.0	0.0012	0%		6.84		7.61		8.07		8.33	3.3	21	2010					21
RE*ULID1/5	57I	57H	24	0.013	112.4	112.00	404	0.0010	2.27	4.6	0.0015	0%		6.84		7.61		8.07		8.33	3.7	21	2010					
RE*ULID1/5	57H	57G	24	0.013	112	111.50	403	0.0012	2.54	5.2	0.0015	0%		6.84		7.61		8.07		8.33	3.2	21	2010					
RE*ULID1/5	57G	57F	24	0.013	111.5	111.00	351	0.0014	2.72	5.5	0.0015	33% c5e-x	0.42	7.25	0.45	8.06	0.47	8.54	0.48	8.81	3.3	21	2010					
RE*ULID1/5	57F	57E	24	0.013	111	110.60	350	0.0011	2.44	4.9	0.0015	0%		7.25		8.06		8.54		8.81	3.9	21	2010					
RE*ULID1/5	57E	57D	24	0.013	110.6	110.00	400	0.0015	2.80	5.7	0.0015	0%		7.25		8.06		8.54		8.81	3.1	21	2010					
RE*ULID1/5	57D	57C	24	0.013	110	109.40	400	0.0015	2.80	5.7	0.0015	0%		7.25		8.06		8.54		8.81	3.1	21	2010					
RE*ULID1/5	57C	57B	24	0.013	109.4	109.30	130	0.0008	2.00	4.1	0.0015	0%		7.25		8.06		8.54		8.81	4.8	24	2010					
RE*ULID1/5	57B	57AA	24	0.013	109.3	108.90	217	0.0018	3.10	6.3	0.0015	0%		7.25		8.06		8.54		8.81	2.5	18	2010					
RE*ULID1/5	57AA	57A	24	0.013	108.9	108.50	268	0.0015	2.79	5.7	0.0015	0%		7.25		8.06		8.54		8.81	3.2	21	2010					
RE*ULID1/5	57A	57	24	0.013	108.5	106.40	500	0.0042	4.68	9.5	0.0015	0%		7.25		8.06		8.54		8.81	-0.7	OK	NE					
	Section		24	0.013		6.00	3423	0.0018		6.1	0.0018	0%		7.25		8.06		8.54		8.81	2.7	18	2010					18
TO ULID 1/5.#57																												

KENT PLANNING ZONE
TASK 250 PARALLEL ALTERNATIVE
LIMITED I/I TO 1100 GPAD ON NEW CONSTRUCTION

Task 250 Report:
KENT PLANNING ZONE - PARALLEL PIPE ALTERNATIVE
I&I LIMITED TO 1,100 GPAD ON NEW CONSTRUCTION

FACILITY	UP-STREAM MH #	DOWN-STREAM MH #	DIA (IN)	Manning n	UP-STREAM INV ELEV	DOWN-STREAM INV ELEV	LENGTH (FT.)	SLOPE (FT/FT)	Vfull (FPS)	Cap. (MGD)	Herrera New Slope	Modification Origin of Flow (%)	2010 Design Flow 2010 Inflow (MGD)	2010 Design Flow Total (MGD)	2020 Design Flow 2020Inflow (MGD)	2020 Design Flow Total (MGD)	2030 Design Flow 2030 Inflow (MGD)	2030 Design Flow Total (MGD)	2050 Design Flow 2050 Inflow (MGD)	2050 Design Flow Total (MGD)	Excess (MGD)	2050 Parallel Pipe (in.)	Decade Exceeded	Surcharge: any negative value in "BW elev" Δ elev FULL pipe	Δ elev	Δ−Δfull	BW elev (ft)	Proposed Diameter (inches)
do not delete this line												100% mill-e	2.36	2.36	2.86	2.86	3.06	3.06	3.23	3.23			X					
RE*MILL	R18F-37A	R18F-37	27	0.013	444.6	442.00	440	0.0059	6.00	15.4	0.0218	25% mill-x	2.77	5.13	3.06	5.92	3.26	6.32	3.37	6.60	-8.8	OK	NE					
RE*MILL	R18F-37	R18F-36	21	0.013	442	434.70	428	0.0171	8.63	13.4	0.0218	0%		5.13		5.92		6.32		6.60	-6.8	OK	NE					
RE*MILL	R18F-36	R18F-35	21	0.013	434.7	428.90	335	0.0173	8.69	13.5	0.0218	0%		5.13		5.92		6.32		6.60	-6.9	OK	NE					
RE*MILL	R18F-35	R18F-34	21	0.013	428.9	423.00	340	0.0174	8.70	13.5	0.0218	0%		5.13		5.92		6.32		6.60	-6.9	OK	NE					
RE*MILL	R18F-34	R18F-33	21	0.013	423	417.00	358	0.0168	8.55	13.3	0.0218	0%		5.13		5.92		6.32		6.60	-6.7	OK	NE					
RE*MILL	R18F-33	R18F-32	21	0.013	417	411.00	358	0.0168	8.55	13.3	0.0218	0%		5.13		5.92		6.32		6.60	-6.7	OK	NE					
	Section*		21	0.013		33.60	2259	0.0149		12.5	0.0149	0%		5.13		5.92		6.32		6.60	-5.9	OK	NE					OK
RE*MILL	R18F-32	R18F-31	24	0.013	411	408.50	408	0.0061	5.65	11.5	0.0218	0%		5.13		5.92		6.32		6.60	-4.9	OK	NE					
RE*MILL	R18F-31	R18F-30	24	0.013	408.5	406.70	307	0.0059	5.53	11.2	0.0218	0%		5.13		5.92		6.32		6.60	-4.6	OK	NE					
RE*MILL	R18F-30	R18F-29	24	0.013	406.7	404.80	320	0.0059	5.56	11.3	0.0218	0%		5.13		5.92		6.32		6.60	-4.7	OK	NE					
	Section*		24	0.013		6.20	1035	0.0060		11.3	0.0060	0%		5.13		5.92		6.32		6.60	-4.7	OK	NE					OK
RE*MILL	R18F-29	R18F-28	21	0.013	404.8	400.50	359	0.0120	7.23	11.2	0.0218	12% mill-x	1.33	6.46	1.47	7.39	1.56	7.88	1.62	8.22	-3.0	OK	NE					
RE*MILL	R18F-28	R18F-27A	18	0.013	400.5	391.80	231	0.0377	11.57	13.2	0.0218	0%		6.46		7.39		7.88		8.22	-5.0	OK	NE					
RE*MILL	R18F-27A	R18F-27	18	0.013	391.8	388.20	80	0.0450	12.64	14.4	0.0218	0%		6.46		7.39		7.88		8.22	-6.2	OK	NE					
RE*MILL	R18F-27	R18F-26	18	0.013	388.2	371.10	379	0.0451	12.66	14.4	0.0218	0%		6.46		7.39		7.88		8.22	-6.2	OK	NE					
RE*MILL	R18F-26	R18F-25	18	0.013	371.1	348.40	367	0.0619	14.82	16.9	0.0218	0%		6.46		7.39		7.88		8.22	-8.7	OK	NE					
RE*MILL	R18F-25	R18F-24	18	0.013	348.4	334.30	318	0.0443	12.55	14.3	0.0218	0%		6.46		7.39		7.88		8.22	-6.1	OK	NE					
RE*MILL	R18F-24	R18F-23	18	0.013	334.3	309.00	405	0.0625	14.90	17.0	0.0218	0%		6.46		7.39		7.88		8.22	-8.8	OK	NE					
RE*MILL	R18F-23	R18F-22	18	0.013	309	278.20	395	0.0780	16.64	19.0	0.0218	0%		6.46		7.39		7.88		8.22	-10.8	OK	NE					
RE*MILL	R18F-22	R18F-21	18	0.013	278.2	263.00	195	0.0779	16.64	19.0	0.0218	0%		6.46		7.39		7.88		8.22	-10.8	OK	NE					
RE*MILL	R18F-21	R18F-20A	18	0.013	263	256.80	165	0.0376	11.56	13.2	0.0218	0%		6.46		7.39		7.88		8.22	-5.0	OK	NE					
RE*MILL	R18F-20A	R18F-20	18	0.013	256.8	252.30	90	0.0500	13.33	15.2	0.0218	0%		6.46		7.39		7.88		8.22	-7.0	OK	NE					
RE*MILL	R18F-20	R18F-19	18	0.013	252.3	238.80	292	0.0462	12.82	14.6	0.0218	0%		6.46		7.39		7.88		8.22	-6.4	OK	NE					
RE*MILL	R18F-19	R18F-18	18	0.013	238.8	216.90	347	0.0631	14.97	17.1	0.0218	0%		6.46		7.39		7.88		8.22	-8.8	OK	NE					
	Section*		18	0.013		187.90	3623	0.0519	13.58	15.5	0.0519	0%		6.46		7.39		7.88		8.22	-7.3	OK	NE					OK
RE*MILL	R18F-18	R18F-17	21	0.013	216.9	213.00	290	0.0134	7.66	11.9	0.0218	0%		6.46		7.39		7.88		8.22	-3.7	OK	NE					
RE*MILL	R18F-17	R18F-16A	18	0.013	213	184.00	447	0.0649	15.18	17.3	0.0218	0%		6.46		7.39		7.88		8.22	-9.1	OK	NE					
RE*MILL	R18F-16A	R18F-16	18	0.013	184	182.70	14	0.0929	18.16	20.7	0.0218	0%		6.46		7.39		7.88		8.22	-12.5	OK	NE					
RE*MILL	R18F-16	R18F-15	18	0.013	182.7	174.60	118	0.0686	15.62	17.8	0.0218	0%		6.46		7.39		7.88		8.22	-9.6	OK	NE					
	Section		18	0.013		38.40	869	0.0442	12.53	14.3	0.0442	0%		6.46		7.39		7.88		8.22	-6.1	OK	NE					OK
RE*MILL	R18F-15	R18F-14	24	0.013	174.6	172.20	380	0.0063	5.74	11.6	0.0218	0%		6.46		7.39		7.88		8.22	-3.4	OK	NE					
RE*MILL	R18F-14	R18F-13	18	0.013	172.2	168.20	143	0.0280	9.97	11.4	0.0218	0%		6.46		7.39		7.88		8.22	-3.1	OK	NE					
RE*MILL	R18F-13	R18F-12	18	0.013	168.2	164.10	140	0.0293	10.20	11.6	0.0218	0%		6.46		7.39		7.88		8.22	-3.4	OK	NE					
RE*MILL	R18F-12	R18F-11	18	0.013	164.1	154.80	149	0.0624	14.89	17.0	0.0218	0%		6.46		7.39		7.88		8.22	-8.8	OK	NE					
RE*MILL	R18F-11	R18F-10	18	0.013	154.8	136.20	295	0.0631	14.97	17.1	0.0218	0%		6.46		7.39		7.88		8.22	-8.8	OK	NE					
	Section*		18	0.013		38.40	1107	0.0347	11.10	12.7	0.0347	0%		6.46		7.39		7.88		8.22	-4.4	OK	NE					OK
RE*MILL	R18F-10	R18F-09	21	0.013	136.2	126.30	439	0.0226	9.92	15.4	0.0218	0%		6.46		7.39		7.88		8.22	-7.2	OK	NE					
	Section*		21	0.013		9.90	439	0.0226	9.92	15.4	0.0218	0%		6.46		7.39		7.88		8.22	-7.2	OK	NE					OK
RE*MILL	R18F-09	R18F-07	30	0.013	126.3	125.00	465	0.0028	4.43	14.0	0.0218	25% mill-x	2.77	9.23	3.06	10.45	3.26	11.14	3.37	11.60	-2.4	OK	NE					
RE*MILL	R18F-07	R18F-06	30	0.013	125	124.40	424	0.0014	3.15	10.0	0.0218	0%		9.23		10.45		11.14		11.60	1.6	12	2020	0.8	0.6	-0.2	-2.2	15
RE*MILL	R18F-06	R18F-05	30	0.013	124.4	123.40	483	0.0021	3.81	12.1	0.0218	25% mill-x	2.77	12.00	3.06	13.51	3.26	14.40	3.37	14.97	2.9	12	2020	1.5	1.0	-0.5	-2.0	15
RE*MILL	R18F-05	R18F-04	30	0.013	123.4	122.00	547	0.0026	4.24	13.4	0.0218	0%		12.00		13.51		14.40		14.97	1.5	9	2020	1.7	1.4	-0.3	-1.5	15
RE*MILL	R18F-04	R18F-03	30	0.013	122	120.60	540	0.0026	4.27	13.5	0.0218	0%		12.00		13.51		14.40		14.97	1.5	9	2020	1.7	1.4	-0.3	-1.1	15
RE*MILL	R18F-03	R18F-02C	30	0.013	120.6	120.40	93	0.0022	3.88	12.3	0.0218	0%		12.00		13.51		14.40		14.97	2.7	12	2020	0.3	0.2	-0.1	-0.8	15
RE*MILL	R18F-02C	R18F-02B	30	0.013	120.4	119.30	515	0.0021	3.87	12.3	0.0218	0%		12.00		13.51		14.40		14.97	2.7	12	2020	1.6	1.1	-0.5	-0.7	15
RE*MILL	R18F-02B	R18F-02A	30	0.013	119.3	118.80	182	0.0027	4.39	13.9	0.0218	0%		12.00		13.51		14.40		14.97	1.1	9	2030	0.6	0.5	-0.1	-0.2	15
RE*MILL	R18F-02A	R18F-02	30	0.013	118.8	118.70	67	0.0015	3.24	10.3	0.0218	0%		12.00		13.51		14.40		14.97	4.7	15	2010	0.2	0.1	-0.1	-0.1	15
RE*MILL	R18F-02	R18F-01	30	0.013	118.7	117.50	375	0.0032	4.74	15.0	0.0218	0%		12.00		13.51		14.40		14.97	0.0	OK	NE					
	Section*		30	0.013		8.80	3691	0.0024	4.09	13.0	0.0024	0%		12.00		13.51		14.40		14.97	2.0	15	2020					ok

Task 250 Report:
KENT PLANNING ZONE - PARALLEL PIPE ALTERNATIVE
I&I LIMITED TO 1,100 GPAD ON NEW CONSTRUCTION

FACILITY	UP-STREAM MH #	DOWN-STREAM MH #	DIA (IN)	Manning n	UP-STREAM INV ELEV	DOWN-STREAM INV ELEV	LENGTH (FT.)	SLOPE (FT/FT)	Vfull (FPS)	Cap. (MGD)	Herrera New Slope	Modification Origin of Flow (%)	2010 Design Flow 2010 Inflow (MGD)	2010 Design Flow Total (MGD)	2020 Design Flow 2020Inflow (MGD)	2020 Design Flow Total (MGD)	2030 Design Flow 2030 Inflow (MGD)	2030 Design Flow Total (MGD)	2050 Design Flow 2050 Inflow (MGD)	2050 Design Flow Total (MGD)	Excess (MGD)	2050 Parallel Pipe (in.)	Decade Exceeded	Surcharge: any negative value in "BW elev" Δ elev FULL pipe	Δ elev	Δ– Δfull	BW elev (ft)	Proposed Diameter (inches)
RE*ULID1/5	R18F-01	75	30	0.013	117.5	117.60	43	-0.0023			0.0218	0%		12.00		13.51		14.40		14.97	15.0	21	2010					
RE*ULID1/5	75	74AA	30	0.013	117.6	117.50	11	0.0091	7.99	25.3	0.0218	0%		12.00		13.51		14.40		14.97	-10.3	OK	NE					
RE*ULID1/5	74AA	74	30	0.013	117.5	117.40	109	0.0009	2.54	8.0	0.0218	0%		12.00		13.51		14.40		14.97	6.9	18	2010					
RE*ULID1/5	74	73	30	0.013	117.4	116.80	348	0.0017	3.48	11.0	0.0218	0%		12.00		13.51		14.40		14.97	4.0	15	2010					
RE*ULID1/5	73	72	30	0.013	116.8	116.10	400	0.0018	3.50	11.1	0.0218	0%		12.00		13.51		14.40		14.97	3.9	15	2010					
RE*ULID1/5	72	71	30	0.013	116.1	115.60	315	0.0016	3.34	10.6	0.0218	0%		12.00		13.51		14.40		14.97	4.4	15	2010					
RE*ULID1/5	71	70	30	0.013	115.6	115.20	270	0.0015	3.22	10.2	0.0218	0%		12.00		13.51		14.40		14.97	4.8	15	2010					
RE*ULID1/5	70	69	30	0.013	115.2	114.40	494	0.0016	3.37	10.7	0.0218	0%		12.00		13.51		14.40		14.97	4.3	15	2010					
RE*ULID1/5	69	68	30	0.013	114.4	113.70	485	0.0014	3.18	10.1	0.0218	0%		12.00		13.51		14.40		14.97	4.9	15	2010					
RE*ULID1/5 @SR167	68	67	30	0.013	113.7	113.50	123	0.0016	3.38	10.7	0.0218	0%		12.00		13.51		14.40		14.97	4.3	15	2010					
Section			30	0.013		4.00	2598	0.0015	3.29	10.4	0.0015	0%		12.00		13.51		14.40		14.97	4.6	24	2010					24
RE*ULID1/5	67	66	27	0.013	113.5	113.00	296	0.0017	3.21	8.2	0.0015	0%		12.00		13.51		14.40		14.97	6.7	27	2010					
RE*ULID1/5	66	65	27	0.013	113	112.40	412	0.0015	2.98	7.6	0.0015	25% xval-x	**0.29**	12.29	**0.30**	13.81	**0.32**	14.72	**0.32**	15.29	7.6	27	2010					
RE*ULID1/5	65	64	27	0.013	112.4	111.70	467	0.0015	3.02	7.8	0.0015	0%		12.29		13.81		14.72		15.29	7.5	27	2010					
RE*ULID1/5	64	63	27	0.013	111.7	111.20	258	0.0019	3.44	8.8	0.0015	0%		12.29		13.81		14.72		15.29	6.5	27	2010					
RE*ULID1/5	63	62	27	0.013	111.2	110.50	404	0.0017	3.25	8.3	0.0015	8% mill-x	**0.89**	13.18	**0.98**	14.79	**1.04**	15.76	**1.08**	16.37	8.0	30	2010					
RE*ULID1/5	62	61	27	0.013	110.5	110.00	322	0.0016	3.08	7.9	0.0015	0%		13.18		14.79		15.76		16.37	8.5	30	2010					
Section			27	0.013		3.50	2159	0.0016		8.1	0.0016	0%		13.18		14.79		15.76		16.37	8.3	30	2010					30
RE*ULID1/5	61	60	30	0.013	110	109.20	469	0.0017	3.46	11.0	0.0015	0%		13.18		14.79		15.76		16.37	5.4	24	2010					
RE*ULID1/5	60	59	30	0.013	109.2	108.70	430	0.0012	2.86	9.0	0.0015	0%		13.18		14.79		15.76		16.37	7.3	27	2010					
RE*ULID1/5	59	58	30	0.013	108.7	108.10	504	0.0012	2.89	9.2	0.0015	0%		13.18		14.79		15.76		16.37	7.2	27	2010					
RE*ULID1/5	58	57	30	0.013	108.1	107.60	419	0.0012	2.89	9.2	0.0015	0%		13.18		14.79		15.76		16.37	7.2	27	2010					
Section			30	0.013		2.40	1822	0.0013		9.6	0.0013	0%		13.18		14.79		15.76		16.37	6.7	27	2010					27
RE*ULID1/5	57	R18-30	42	0.013	106.6	106.40	404	0.0005	2.33	14.5	0.0004	100% ULID1/5 57A	**7.25**	20.43	**8.06**	22.85	**8.54**	24.31	**8.81**	25.18	10.7	39	2010					
RE*ULID1/5	56	55	42	0.013	106.4	106.30	393	0.0003	1.67	10.4	0.0004	0%		20.43		22.85		24.31		25.18	14.8	45	2010					
RE*ULID1/5	55	54	42	0.013	106.3	106.10	432	0.0005	2.26	14.0	0.0004	0%		20.43		22.85		24.31		25.18	11.2	42	2010					
RE*ULID1/5	54	53	42	0.013	106.1	105.90	442	0.0005	2.23	13.8	0.0004	0%		20.43		22.85		24.31		25.18	11.3	42	2010					
Section*			42	0.013		0.70	1671	0.0004	2.15	13.3	0.0004	0%		20.43		22.85		24.31		25.18	11.9	42	2010					42
RE*ULID1/5	53	52	42	0.013	105.9	103.70	436	0.0050			0.0050	0%		20.43		22.85		24.31		25.18	25.2	36	2010					
Section*			42	0.013		2.20	436	0.0050		46.2	0.0050	0%		20.43		22.85		24.31		25.18	-21.0	OK	NE					OK
RE*ULID1/2	52	51	72	0.012	103.7	103.60	353	0.0003	2.74	50.0	0.0050	35% AUBURN1-SPLIT	**26.09**	46.52	**31.60**	54.45	**33.16**	57.46	**33.90**	59.08	9.1	24	2020					
												100% KENTXVAL TO SI	**14.27**	14.27	**16.21**	16.21	**17.04**	17.04	**17.25**	17.25			2010					
												65% AUBURN1-SPLIT	**48.45**	48.45	**58.68**	58.68	**61.58**	61.58	**62.95**	62.95			2010					
*RWSP pipe or section data revised.																			139.3	139.27 check								

APPENDIX 250-D

KENT PLANNING ZONE REROUTING ALTERNATIVE FLOW ROUTING WITH I/I HELD TO 1,100 GPAD ON NEW CONSTRUCTION

Task 250 Report:
KENT PLANNING ZONE - REROUTING ALTERNATIVE
I&I LIMITED TO 1,100 GPAD ON NEW CONSTRUCTION

FACILITY	UP-STREAM MH #	DOWN-STREAM MH #	DIA. (IN)	Manning n	UP-STREAM INV ELEV	DOWN-STREAM INV ELEV	LENGTH (FT.)	SLOPE (FT/FT)	Vfull (FT/SEC)	Cap. (MGD)	Herrera New Slope	Modification Origin of Flow Percent	2010 Design Flow Inflow (MGD)	2010 Design Flow Total (MGD)	2020 Design Flow Inflow (MGD)	2020 Design Flow Total (MGD)	2030 Design Flow Inflow (MGD)	2030 Design Flow Total (MGD)	2050 Design Flow Inflow (MGD)	2050 Design Flow Total (MGD)	Excess (+) (MGD)	2050 Parallel Pipe (in.)	Decade Exceeded	Surcharge: any negative value in "BW elev" Δ elev FULL pipe	Δ elev	Δ−Δfull	BW elev (ft)	Proposed Diameter (inches)
do not delete this line																												
												45% ulid4-x	1.00	1.00	1.09	1.1	1.16	1.2	1.17	1.2			X					
MEEKER TRUNK from WHILL 6B	6B	MT2	24	0.013	131.10	125.58	2400	0.0023	3.46	7.0	0.0023	0% whill-x		1.00		1.1		1.2		1.2	-5.85	OK	NE					
MEEKER TRUNK to SW Trunk	MT2	SWK3	24	0.013	125.58	120.06	2400	0.0023	3.46	7.0	0.0023	0%		1.00		1.1		1.2		1.2	-5.85	OK	NE					
Summary uses section slope			24	0.013		11.04	4800	0.0023	3.46	7.0	0.0023	0%		1.00		1.1		1.2		1.2	-5.85	OK	NE					24
TO SOUTHWEST TRUNK												0%																
do not delete this line												0%																
JAMES TRUNK from MILL#6	R18F-06	JT2	30	0.013	124.40	118.64	3000	0.0019	3.67	11.6	0.0019	100% MILL #6	8.90	8.90	10.08	10.1	10.75	10.8	11.19	11.2	-0.44	OK	NE					
JAMES TRUNK to AUB1#19	JT2	AUB1#19	30	0.013	118.64	117.10	800	0.0019	3.67	11.6	0.0019	25% xval-x	0.29	9.19	0.30	10.4	0.32	11.1	0.32	11.5	-0.12	OK	NE					
Summary uses section slope			30	0.013		7.30	3800	0.0019	3.67	11.6	0.0019	0%		9.19		10.4		11.1		11.5	-0.12	OK	NE					30
TO SOUTHWEST TRUNK												0%																
do not delete this line												0%																
SOUTHWEST TRUNK												100% SW TRUNK from Kent											X					
SW TRUNK @Aub3#48	SWK1	SWK2	72	0.013	123.90	123.12	1000	0.0008	4.19	76.5	0.0008	39% AUBURN3 #48	26.79	26.79	32.43	32.4	34.03	34.0	34.78	34.8	-41.73	OK	NE					
SW TRUNK	SWK2	SWK3	72	0.013	123.12	116.10	9000	0.0008	4.19	76.5	0.0008	0%		26.79		32.4		34.0		34.8	-41.73	OK	NE					
SW TRUNK @ Meeker	SWK3	SWK4	72	0.013	116.10	108.09	8800	0.0009	4.53	82.6	0.0009	100% MEEKER TRUNK	1.00	27.79	1.09	33.5	1.16	35.2	1.17	36.0	-46.69	OK	NE					
SW TRUNK	SWK4	SWK5	72	0.013	108.09	107.91	200	0.0009	4.53	82.6	0.0009	0%		27.79		33.5		35.2		36.0	-46.69	OK	NE					
SW TRUNK	SWK5	SWK6	72	0.013	107.91	107.36	600	0.0009	4.53	82.6	0.0009	0%		27.79		33.5		35.2		36.0	-46.69	OK	NE					
SW TRUNK to S. Int.	SWK6	R18A-56	72	0.013	107.36	107.00	400	0.0009	4.53	82.6	0.0009	0%		27.79		33.5		35.2		36.0	-46.69	OK	NE					
Summary uses section slope			72	0.013		16.90	20000	0.0008	4.37	79.6	0.0008	0%		27.79		33.5		35.2		36.0	-43.68	OK	NE					72
TO SOUTH INTERCEPTOR												0%																

Task 250 Report:
KENT PLANNING ZONE - REROUTING ALTERNATIVE
I&I LIMITED TO 1,100 GPAD ON NEW CONSTRUCTION

FACILITY	UP-STREAM MH #	DOWN-STREAM MH #	DIA. (IN)	Manning n	UP-STREAM INV ELEV	DOWN-STREAM INV ELEV	LENGTH (FT.)	SLOPE (FT/FT)	Vfull (FT/SEC)	Cap. (MGD)	Herrera New Slope	Modification Origin of Flow Percent	2010 Design Flow Inflow (MGD)	2010 Design Flow Total (MGD)	2020 Design Flow Inflow (MGD)	2020 Design Flow Total (MGD)	2030 Design Flow Inflow (MGD)	2030 Design Flow Total (MGD)	2050 Design Flow Inflow (MGD)	2050 Design Flow Total (MGD)	Excess (+) (MGD)	2050 Parallel Pipe (in.)	Decade Exceeded	Surcharge: any negative value in "BW elev" Δ elev FULL pipe	Δ elev	Δ−Δfull	BW elev (ft)	Proposed Diameter (inches)
do not delete this line												100% AUBURN3 from Kent	47.59	47.59	55.12	55.1	58.04	58.0	59.18	59.2			X					
RE*AUBURN3	R18H-49	R18H-48	72	0.013	124.70	124.50	1000	0.0002	2.12	38.7	0.0008	0%		47.59		55.1		58.0		59.2	20.44	45	2010					
												100% S256TH CORR	18.42	66.01	23.87	79.0	24.87	82.9	25.44	84.6			X					
												100% S SOOS	2.68	68.69	4.18	83.2	4.36	87.3	4.57	89.2			X					
												-39% AUBURN3 #48	-26.79	41.90	-32.43	50.7	-34.03	53.2	-34.78	54.4			X					
RE*AUBURN3	R18H-48	R18H-47	72	0.013	124.50	123.70	659	0.0012	5.23	95.5	0.0008	0%		41.90		50.7		53.2		54.4	-41.05	OK	NE					
												0%		41.90		50.7		53.2		54.4			X					
RE*AUBURN3	R18H-47	R18H-45	72	0.013	123.70	123.30	827	0.0005	3.30	60.3	0.0008	0%		41.90		50.7		53.2		54.4	-5.85	OK	NE					
RE*AUBURN3	R18H-45	R18H-44	72	0.013	123.30	123.20	454	0.0002	2.23	40.7	0.0008	10% aub2-s	0.24	42.14	0.34	51.1	0.35	53.6	0.36	54.8	14.11	39	2010					
RE*AUBURN3	R18H-44	R18H-43	72	0.013	123.20	122.90	592	0.0005	3.38	61.7	0.0008	0%		42.14		51.1		53.6		54.8	-6.90	OK	NE					
RE*AUBURN3	R18H-43	R18H-42	72	0.013	122.90	122.40	575	0.0009	4.43	80.8	0.0008	0%		42.14		51.1		53.6		54.8	-26.02	OK	NE					
	Section		72	0.013		2.30	3107	0.0007	4.09	74.5	0.0007	0%		42.14		51.1		53.6		54.8	-19.77	OK	NE					OK
RE*AUBURN2	R18H-42	R18H-41	72	0.013	122.40	122.00	575	0.0007	3.96	72.3	0.0008	68% aub2-s	1.61	43.74	2.30	53.4	2.39	56.0	2.48	57.2	-15.01	OK	NE					
RE*AUBURN2	R18H-41	R18H-40	72	0.013	122.00	121.60	575	0.0007	3.96	72.3	0.0008	0%		43.74		53.4		56.0		57.2	-15.01	OK	NE					
RE*AUBURN2	R18H-40	R18H-39	72	0.013	121.60	121.10	518	0.0010	4.67	85.1	0.0008	0%		43.74		53.4		56.0		57.2	-27.87	OK	NE					
RE*AUBURN2	R18H-39	R18H-38	72	0.013	121.10	120.80	570	0.0005	3.45	62.9	0.0008	0%		43.74		53.4		56.0		57.2	-5.60	OK	NE					
RE*AUBURN2	R18H-38	R18H-37	72	0.013	120.80	120.20	610	0.0010	4.71	85.9	0.0008	22% aub2-s	0.52	44.26	0.74	54.1	0.77	56.7	0.80	58.0	-27.87	OK	NE					
RE*AUBURN2	R18H-37*	R18H-36	72	0.013	120.20	119.51	610	0.0011	5.05	92.1	0.0008	0%		44.26		54.1		56.7		58.0	-34.09	OK	NE					
RE*AUBURN2	R18H-36*	R18H-35	72	0.013	119.51	119.56	155	-0.0003			0.0008	0%		44.26		54.1		56.7		58.0	58.05	66	2010					
	Section*		72	0.013		2.84	3613	0.0008		76.8	0.0008	0%		44.26		54.1		56.7		58.0	-18.76	OK	NE					OK
RE*AUBURN2 SIPHON	R18H-35*	R18H-34	54	0.013	119.56	118.40	200	0.0058	64%	96.9		0%		44.26		54.1		56.7		58.0	-38.84	OK	NE					
RE*AUBURN2 SIPHON	R18H-35*	R18H-34	42	0.013	119.56	118.40	200	0.0058	33%	49.6		0%		44.26		54.1		56.7		58.0	8.48	#DIV/0!	2020					
RE*AUBURN2 SIPHON	R18H-35*	R18H-34	18	0.013	119.56	118.40	200	0.0058	3%	5.2		0%		44.26		54.1		56.7		58.0	52.87		2010					
	Section*		64	0.013	119.56	118.40	200					0%		44.26		54.1		56.7		58.0								ok
RE*AUBURN2	R18H-34	R18H-33	72	0.013	118.40	118.30	186	0.0005	3.48	63.5	0.0008	70% aub2-n	1.76	46.02	1.88	56.0	2.00	58.7	2.03	60.1	-3.44	OK	NE					
RE*AUBURN2	R18H-33	R18H-32	72	0.013	118.30	117.90	535	0.0007	4.11	74.9	0.0008	0%		46.02		56.0		58.7		60.1	-14.83	OK	NE					
RE*AUBURN2	R18H-32	R18H-31	72	0.013	117.90	117.50	517	0.0008	4.18	76.2	0.0008	0%		46.02		56.0		58.7		60.1	-16.13	OK	NE					
RE*AUBURN2	R18H-31	R18H-30	72	0.013	117.50	117.10	518	0.0008	4.17	76.1	0.0008	0%		46.02		56.0		58.7		60.1	-16.05	OK	NE					
RE*AUBURN2	R18H-30	R18H-29	72	0.013	117.10	116.40	517	0.0014	5.53	100.8	0.0008	0%		46.02		56.0		58.7		60.1	-40.73	OK	NE					
RE*AUBURN2	R18H-29	R18H-28	72	0.013	116.40	115.90	517	0.0010	4.67	85.2	0.0008	0%		46.02		56.0		58.7		60.1	-25.12	OK	NE	0.25	0.50	0.25	-0.05	
RE*AUBURN2 @SR516	R18H-28	R18H-27	72	0.013	115.90	116.10	220	-0.0009			0.0008	0%		46.02		56.0		58.7		60.1	60.08	66	2010	0.11	-0.20	-0.31	-0.31	ignore
RE*AUBURN2 @SR516	R18H-27	R18H-26	72	0.013	116.10	115.90	179	0.0011	5.02	91.6	0.0008	30% aub2-n	0.75	46.77	0.81	56.8	0.86	59.6	0.87	61.0	-30.62	OK	NE	0.09	0.20	0.11	0.11	
RE*AUBURN2	R18H-26	R18H-25	72	0.013	115.90	115.70	416	0.0005	3.29	60.1	0.0008	0%		46.77		56.8		59.6		61.0	0.88	15	2050	0.21	0.20	-0.01	-0.01	ignore
RE*AUBURN2	R18H-25	R18H-24	72	0.013	115.70	114.40	736	0.0018	6.31	115.1	0.0008	0%		46.77		56.8		59.6		61.0	-54.19	OK	NE	0.36	1.30	0.94	0.50	
RE*AUBURN2	R18H-24	R18H-23	72	0.013	114.40	114.70	116	-0.0026			0.0008	0%		46.77		56.8		59.6		61.0	60.95	69	2010	0.06	-0.30	-0.36	-0.44	ignore
RE*AUBURN2	R18H-23	R18H-22	72	0.013	114.70	114.50	577	0.0003	2.80	51.0	0.0008	0%		46.77		56.8		59.6		61.0	9.94	36	2020	0.28	0.20	-0.08	-0.08	ignore
	Section		72	0.013		3.90	5034	0.0008	4.18	76.3	0.0008	0%		46.77		56.8		59.6		61.0	-15.31	OK	NE					OK
RE*AUBURN1	R18H-22	R18H-21A	72	0.013	114.50	114.20	410	0.0007	4.06	74.1	0.0008	0%		46.77		56.8		59.6		61.0	-13.16	OK	NE					
RE*AUBURN1	R18H-21A	R18H-21	72	0.013	114.20	113.90	410	0.0007	4.06	74.1	0.0008	0%		46.77		56.8		59.6		61.0	-13.16	OK	NE					
RE*AUBURN1	R18H-21	R18H-19	72	0.013	113.90	113.60	492	0.0006	3.71	67.7	0.0008	0%		46.77		56.8		59.6		61.0	-6.70	OK	NE					
RE*AUBURN1 @SR 167	R18H-19	R18H-18	72	0.013	113.60	113.20	260	0.0015	5.89	107.5	0.0008	100% JAMES TRUNK	9.19	55.96	10.39	67.2	11.07	70.7	11.51	72.5	-34.99	OK	NE					
RE*AUBURN1	R18H-18	R18H-17	72	0.013	113.20	112.90	260	0.0012	5.10	93.1	0.0008	0%		55.96		67.2		70.7		72.5	-20.60	OK	NE					
RE*AUBURN1	R18H-17	R18H-16	72	0.013	112.90	112.50	468	0.0009	4.39	80.1	0.0008	0%		55.96		67.2		70.7		72.5	-7.63	OK	NE	0.33	0.40	0.07	0.00	
RE*AUBURN1	R18H-16	R18H-15	72	0.013	112.50	112.20	413	0.0007	4.05	73.8	0.0008	0%		55.96		67.2		70.7		72.5	-1.37	OK	NE	0.29	0.30	0.01	-0.07	
RE*AUBURN1	R18H-15	R18H-14	72	0.013	112.20	111.90	546	0.0005	3.52	64.2	0.0008	25% xval-x	0.29	56.24	0.30	67.5	0.32	71.0	0.32	72.8	8.57	33	2020	0.38	0.30	-0.08	-0.08	ignore
RE*AUBURN1	R18H-14	R18H-13	72	0.013	111.90	111.50	540	0.0007	4.09	74.6	0.0008	0%		56.24		67.5		71.0		72.8	-1.77	OK	NE					
RE*AUBURN1	R18H-13	R18H-12	72	0.013	111.50	111.00	530	0.0009	4.61	84.1	0.0008	0%		56.24		67.5		71.0		72.8	-11.36	OK	NE					
RE*AUBURN1	R18H-12	R18H-11	72	0.013	111.00	110.50	655	0.0008	4.15	75.7	0.0008	0%		56.24		67.5		71.0		72.8	-2.91	OK	NE					
RE*AUBURN1	R18H-11	R18H-10	72	0.013	110.50	110.00	640	0.0008	4.20	76.6	0.0008	0%		56.24		67.5		71.0		72.8	-3.79	OK	NE					
RE*AUBURN1	R18H-10	R18H-09	72	0.013	110.00	109.60	398	0.0010	4.76	86.9	0.0008	0%		56.24		67.5		71.0		72.8	-14.06	OK	NE	0.28	0.40	0.12	0.09	

Task 250 Report:
KENT PLANNING ZONE - REROUTING ALTERNATIVE
I&I LIMITED TO 1,100 GPAD ON NEW CONSTRUCTION

FACILITY	UP-STREAM MH #	DOWN-STREAM MH #	DIA. (IN)	Manning n	UP-STREAM INV ELEV	DOWN-STREAM INV ELEV	LENGTH (FT.)	SLOPE (FT/FT)	Vfull (FT/SEC)	Cap. (MGD)	Herrera New Slope	Modification Origin of Flow Percent	2010 Design Flow Inflow (MGD)	2010 Design Flow Total (MGD)	2020 Design Flow Inflow (MGD)	2020 Design Flow Total (MGD)	2030 Design Flow Inflow (MGD)	2030 Design Flow Total (MGD)	2050 Design Flow Inflow (MGD)	2050 Design Flow Total (MGD)	Excess (+) (MGD)	2050 Parallel Pipe (in.)	Decade Exceeded	Surcharge: any negative value in "BW elev" Δ elev FULL pipe	Δ elev	Δ−Δfull	BW elev (ft)	Proposed Diameter (inches)
RE*AUBURN1	R18H-09	R18H-08	72	0.013	109.60	109.40	112	0.0018	6.35	115.8	0.0008	100% xval-s	**0.41**	56.65	**0.43**	67.9	**0.46**	71.5	**0.46**	73.3	-42.52	OK	NE	0.08	0.20	0.12	-0.03	
RE*AUBURN1	R18H-08	R18H-07	72	0.013	109.40	109.10	629	0.0005	3.28	59.8	0.0008	0%		56.65		67.9		71.5		73.3	13.42	39	2020	0.45	0.30	**-0.15**	-0.15	ignore
RE*AUBURN1	R18H-07	R18H-06	72	0.013	109.10	108.60	629	0.0008	4.23	77.2	0.0008	0%		56.65		67.9		71.5		73.3	-3.99	OK	NE					
RE*AUBURN1	R18H-06	R18H-05	72	0.013	108.60	108.00	534	0.0011	5.03	91.8	0.0008	0%		56.65		67.9		71.5		73.3	-18.58	OK	NE					
RE*AUBURN1	R18H-05	R18H-04	72	0.013	108.00	107.50	565	0.0009	4.47	81.5	0.0008	0%		56.65		67.9		71.5		73.3	-8.25	OK	NE	0.40	0.50	0.10	0.05	
RE*AUBURN1	R18H-04	R18H-03	72	0.013	107.50	107.20	494	0.0006	3.70	67.5	0.0008	0%		56.65		67.9		71.5		73.3	5.74	30	2020	0.35	0.30	**-0.05**	-0.05	ignore
RE*AUBURN1	R18H-03	R18H-02	72	0.013	107.20	106.80	520	0.0008	4.17	76.0	0.0008	0%		56.65		67.9		71.5		73.3	-2.74	OK	NE					
RE*AUBURN1	R18H-02	R18H-01	72	0.013	106.80	106.40	520	0.0008	4.17	76.0	0.0008	0%		56.65		67.9		71.5		73.3	-2.74	OK	NE					
Section			72	0.013		8.10	10025	0.0008	4.27	77.9	0.0008	0%		56.65		67.9		71.5		73.3	-4.63	OK	NE					OK
% TO SOUTH INTERCEPTOR												-50% AUBURN1	**-28.33**	28.33	**-33.96**	34.0	**-35.73**	35.7	**-36.63**	36.6			X					
RE*AUBURN1	R18H-01	R18G-01A	60	0.013	106.40	105.90	36	0.0139	15.67	198.6	0.0026	25% xval-x	**0.29**	28.61	**0.30**	34.3	**0.32**	36.0	**0.32**	36.9	-161.61	OK	NE					
RE*KENTX	R18G-01A	R18G-01	72	0.013	104.00	103.80	635	0.0003	2.67	48.6	0.0026	0%		28.61		34.3		36.0		36.9	-11.67	OK	NE					
RE*KENTX	R18G-01	52	72	0.013	103.80	103.70	353	0.0003	2.53	46.1	0.0026	0%		28.61		34.3		36.0		36.9	-9.16	OK	NE					
Section			72	0.013		2.70	1024	0.0026	7.71	140.7	0.0026	0%		28.61		34.3		36.0		36.9	-103.73	OK	NE					OK
TO ULID1/5#52																												

Task 250 Report:
KENT PLANNING ZONE - REROUTING ALTERNATIVE
I&I LIMITED TO 1,100 GPAD ON NEW CONSTRUCTION

FACILITY	UP-STREAM MH #	DOWN-STREAM MH #	DIA. (IN)	Manning n	UP-STREAM INV ELEV	DOWN-STREAM INV ELEV	LENGTH (FT.)	SLOPE (FT/FT)	Vfull (FT/SEC)	Cap. (MGD)	Herrera New Slope	Modification Origin of Flow Percent	2010 Design Flow Inflow (MGD)	2010 Design Flow Total (MGD)	2020 Design Flow Inflow (MGD)	2020 Design Flow Total (MGD)	2030 Design Flow Inflow (MGD)	2030 Design Flow Total (MGD)	2050 Design Flow Inflow (MGD)	2050 Design Flow Total (MGD)	Excess (+) (MGD)	2050 Parallel Pipe (in.)	Decade Exceeded	Surcharge: any negative value in "BW elev" Δ elev FULL pipe	Δ elev	Δ−Δfull	BW elev (ft)	Proposed Diameter (inches)
RE*WHILL	15	14	24	0.013	155.30	153.30	221	0.0090	6.87	13.9	0.0055	100% whill-x	5.63	5.63	6.31	6.3	6.66	6.7	6.77	6.8	-7.15	OK	NE					
RE*WHILL	14	13	24	0.013	153.30	146.20	249	0.0285	12.19	24.7	0.0055	0%		5.63		6.3		6.7		6.8	-17.94	OK	NE	0.53	7.10	6.57	6.46	
RE*WHILL	13	12	24	0.013	146.20	145.40	286	0.0028	3.82	7.7	0.0055	0%		5.63		6.3		6.7		6.8	-0.97	OK	NE	0.61	0.80	0.19	-0.11	
RE*WHILL	12	11	24	0.013	145.40	144.60	514	0.0016	2.85	5.8	0.0055	0%		5.63		6.3		6.7		6.8	1.00	12	2020	1.10	0.80	-0.30	-0.30	ignore
RE*WHILL	11	10	24	0.013	144.60	144.40	95	0.0021	3.31	6.7	0.0055	0%		5.63		6.3		6.7		6.8	0.06	6	2050	0.20	0.20	0.00	0.00	ignore
RE*WHILL	10	09	24	0.013	144.40	143.50	222	0.0041	4.60	9.3	0.0055	0%		5.63		6.3		6.7		6.8	-2.54	OK	NE					
RE*WHILL	09	08	24	0.013	143.50	142.30	305	0.0039	4.53	9.2	0.0055	0%		5.63		6.3		6.7		6.8	-2.41	OK	NE					
RE*WHILL	08	07	24	0.013	142.30	140.00	344	0.0067	5.90	12.0	0.0055	0%		5.63		6.3		6.7		6.8	-5.19	OK	NE					
RE*WHILL	07	06A	24	0.013	140.00	131.20	500	0.0176	9.58	19.4	0.0055	0%		5.63		6.3		6.7		6.8	-12.64	OK	NE					
RE*WHILL	06A*	06B	24	0.013	131.20	131.10	15	0.0067	5.90	11.9	0.0055	-60% whill-x	-3.38	2.25	-3.78	2.5	-4.00	2.7	-4.06	2.7	-9.24	OK	NE					
RE*WHILL	06B*	06	24	0.013	131.10	130.40	335	0.0021	3.30	6.7	0.0055	0%		2.25		2.5		2.7		2.7	-3.98	OK	NE					
RE*WHILL	06	05	24	0.013	130.40	129.70	350	0.0020	3.23	6.5	0.0055	0%		2.25		2.5		2.7		2.7	-3.83	OK	NE					
RE*WHILL	05	04	24	0.013	129.70	128.70	500	0.0020	3.23	6.5	0.0055	0%		2.25		2.5		2.7		2.7	-3.83	OK	NE					
RE*WHILL	04	03	24	0.013	128.70	127.90	410	0.0020	3.19	6.5	0.0055	0%		2.25		2.5		2.7		2.7	-3.75	OK	NE					
RE*WHILL	03	02	24	0.013	128.90	127.00	413	0.0046	4.90	9.9	0.0055	0%		2.25		2.5		2.7		2.7	-7.22	OK	NE					
RE*WHILL	02	01A	24	0.013	127.00	126.50	240	0.0021	3.29	6.7	0.0055	5% ulid4-x	0.11	2.36	0.12	2.6	0.13	2.8	0.13	2.8	-3.84	OK	NE					
RE*WHILL	01A	01	24	0.013	126.50	126.40	96	0.0010	2.33	4.7	0.0055	0% whill-x		2.36		2.6		2.8		2.8	-1.88	OK	NE					
RE*WHILL	01	S-31A	24	0.013	126.40	125.70	40	0.0175	9.55	19.4	0.0055	0%		2.36		2.6		2.8		2.8	-16.52	OK	NE					
RE*WHILL	S-31A	S-31B	24	0.013	125.70	125.50	294	0.0007	1.88	3.8	0.0055	0%		2.36		2.6		2.8		2.8	-0.98	OK	NE					
	Section*		24	0.013		29.80	5429	0.0055	5.35	10.8	0.0055	0%		2.36		2.6		2.8		2.8	-8.01	OK	NE					OK
RE*WHILL	S-31B	S-31	24	0.013	125.50	122.30	14	0.2286	34.52	70.0	0.2286	0%		2.36		2.6		2.8		2.8	-67.13	OK	NE					
RE*ULID1/4	S-31	S-30	24	0.013	122.30	121.50	448	0.0018	3.05	6.2	0.0013	0%		2.36		2.6		2.8		2.8	-3.35	OK	NE					
RE*ULID1/4	S-30	S-29	24	0.013	121.50	120.00	454	0.0033	4.15	8.4	0.0013	5% ulid4-x	0.11	2.48	0.12	2.8	0.13	2.9	0.13	3.0	-5.44	OK	NE	0.19	1.50	1.31	1.23	
RE*ULID1/4	S-29	S-28	24	0.013	120.00	119.90	443	0.0002	1.09	2.2	0.0013	0%		2.48		2.8		2.9		3.0	0.77	12	2010	0.18	0.10	-0.08	-0.08	ignore
RE*ULID1/4	S-28	S-27	24	0.013	119.90	119.10	446	0.0018	3.06	6.2	0.0013	30% ulid4-x	0.67	3.14	0.73	3.5	0.77	3.7	0.78	3.8	-2.45	OK	NE					
RE*ULID1/4	S-27	S-26	24	0.013	119.10	118.10	463	0.0022	3.35	6.8	0.0013	0%		3.14		3.5		3.7		3.8	-3.05	OK	NE					
RE*ULID1/4	S-26	S-25	24	0.013	118.10	117.30	405	0.0020	3.21	6.5	0.0013	0%		3.14		3.5		3.7		3.8	-2.75	OK	NE					
RE*ULID1/4	S-25	S-24	24	0.013	117.30	116.70	285	0.0021	3.31	6.7	0.0013	0%		3.14		3.5		3.7		3.8	-2.96	OK	NE					
RE*ULID1/4	S-24	S-23	24	0.013	116.70	115.90	353	0.0023	3.44	7.0	0.0013	0%		3.14		3.5		3.7		3.8	-3.22	OK	NE					
	Section		24	0.013		6.40	3297	0.0019	3.18	6.4	0.0019	0%		3.14		3.5		3.7		3.8	-2.69	OK	NE					OK
RE*ULID1/4	S-23	S-22	30	0.013	115.90	115.30	348	0.0017	3.48	11.0	0.0013	15% ulid4-x	0.33	3.48	0.36	3.9	0.39	4.1	0.39	4.1	-6.88	OK	NE					
RE*ULID1/4	S-22	S-20	30	0.013	115.30	115.00	409	0.0007	2.27	7.2	0.0013	0%		3.48		3.9		4.1		4.1	-3.04	OK	NE					
RE*ULID1/4	S-20	S-19	30	0.013	115.00	114.70	320	0.0009	2.56	8.1	0.0013	0%		3.48		3.9		4.1		4.1	-3.98	OK	NE					
RE*ULID1/4	S-19	S-18	30	0.013	114.70	114.50	201	0.0010	2.64	8.4	0.0013	20% 250s-x	0.60	4.08	0.67	4.5	0.70	4.8	0.71	4.9	-3.52	OK	NE					
RE*ULID1/4	S-18	S-17	30	0.013	114.50	114.20	185	0.0016	3.37	10.7	0.0013	0%		4.08		4.5		4.8		4.9	-5.83	OK	NE					
	Section		30	0.013		1.70	1463	0.0012	2.86	9.0	0.0012	0%		4.08		4.5		4.8		4.9	-4.19	OK	NE					OK
RE*ULID250	S-17	S-16	30	0.013	114.20	114.00	290	0.0007	2.20	7.0	0.0013	0%		4.08		4.5		4.8		4.9	-2.12	OK	NE					
RE*ULID250	S-16	S-15A	30	0.013	114.00	113.60	500	0.0008	2.37	7.5	0.0013	0%		4.08		4.5		4.8		4.9	-2.65	OK	NE					
RE*ULID250	S-15	S-14	30	0.013	113.60	113.10	502	0.0010	2.64	8.4	0.0013	0%		4.08		4.5		4.8		4.9	-3.52	OK	NE					
RE*ULID250	S-14	S-13	30	0.013	113.10	112.60	500	0.0010	2.65	8.4	0.0013	0%		4.08		4.5		4.8		4.9	-3.54	OK	NE					
RE*ULID250	S-13	S-12	30	0.013	112.60	112.20	500	0.0008	2.37	7.5	0.0013	0%		4.08		4.5		4.8		4.9	-2.65	OK	NE					
RE*ULID250	S-12	S-11	30	0.013	112.20	111.40	324	0.0025	4.16	13.2	0.0013	0%		4.08		4.5		4.8		4.9	-8.33	OK	NE	0.11	0.80	0.69	0.65	
RE*ULID250	S-11	S-10	30	0.013	111.40	111.30	440	0.0002	1.26	4.0	0.0013	0%		4.08		4.5		4.8		4.9	0.85	15	2010	0.15	0.10	-0.05	-0.05	ignore
	Section		30	0.013		2.90	3056	0.0009	2.58	8.2	0.0009	0%		4.08		4.5		4.8		4.9	-3.32	OK	NE					OK
RE*ULID250	S-10	S-09	36	0.013	111.30	111.10	445	0.0004	2.01	9.1	0.0013	0%		4.08		4.5		4.8		4.9	-4.30	OK	NE					
RE*ULID250	S-09	S-08	36	0.013	111.10	110.90	446	0.0004	2.00	9.1	0.0013	0%		4.08		4.5		4.8		4.9	-4.28	OK	NE					
RE*ULID250	S-08	S-07	36	0.013	110.90	110.80	350	0.0003	1.60	7.3	0.0013	0%		4.08		4.5		4.8		4.9	-2.44	OK	NE					
RE*ULID250	S-07	S-06	36	0.013	110.80	110.50	497	0.0006	2.32	10.6	0.0013	0%		4.08		4.5		4.8		4.9	-5.75	OK	NE					
	Section*		36	0.013		0.80	1738	0.0005	2.03	9.3	0.0005	0%		4.08		4.5		4.8		4.9	-4.41	OK	NE					
RE*ULID250	S-06	S-05	36	0.013	110.50	110.20	305	0.0010	2.97	13.5	0.0013	0%		4.08		4.5		4.8		4.9	-8.68	OK	NE					
RE*ULID250	S-05	S-04A	36	0.013	110.20	110.10	255	0.0004	1.87	8.5	0.0013	0%		4.08		4.5		4.8		4.9	-3.69	OK	NE					
RE*ULID250	S-04A	S-03	36	0.013	110.10	109.60	430	0.0012	3.23	14.7	0.0013	80% 250s-x	2.41	6.49	2.67	7.2	2.81	7.6	2.84	7.7	-7.03	OK	NE					
RE*ULID250	S-03	S-02	36	0.013	109.60	109.00	432	0.0014	3.53	16.1	0.0013	0%		6.49		7.2		7.6		7.7	-8.39	OK	NE					
RE*ULID250	S-02	S-01	36	0.013	109.00	108.40	455	0.0013	3.44	15.7	0.0013	0%		6.49		7.2		7.6		7.7	-7.98	OK	NE					
RE*ULID250	S-01	N-01	36	0.013	108.40	107.80	503	0.0012	3.27	14.9	0.0013	0%		6.49		7.2		7.6		7.7	-7.21	OK	NE					
RE*ULID250	N-01	N-02	36	0.013	107.80	105.90	525	0.0036	5.69	26.0	0.0036	0%		6.49		7.2		7.6		7.7	-18.26	OK	NE					
	Section*		36	0.013		4.60	2905	0.0016	3.76	17.2	0.0016	0%		6.49		7.2		7.6		7.7	-9.48	OK	NE					OK
TO ULID 250 #N-02																												

Task 250 Report:
KENT PLANNING ZONE - REROUTING ALTERNATIVE
I&I LIMITED TO 1,100 GPAD ON NEW CONSTRUCTION

FACILITY	UP-STREAM MH #	DOWN-STREAM MH #	DIA. (IN)	Manning n	UP-STREAM INV ELEV	DOWN-STREAM INV ELEV	LENGTH (FT.)	SLOPE (FT/FT)	Vfull (FT/SEC)	Cap. (MGD)	Herrera New Slope	Modification Origin of Flow Percent	2010 Design Flow Inflow (MGD)	2010 Design Flow Total (MGD)	2020 Design Flow Inflow (MGD)	2020 Design Flow Total (MGD)	2030 Design Flow Inflow (MGD)	2030 Design Flow Total (MGD)	2050 Design Flow Inflow (MGD)	2050 Design Flow Total (MGD)	Excess (+) (MGD)	2050 Parallel Pipe (in.)	Decade Exceeded	Surcharge: any negative value in "BW elev" Δ elev FULL pipe	Δ elev	Δ−Δfull	BW elev (ft)	Proposed Diameter (inches)
RE*ULID250	N-06G	N-06F	15	0.013	113.70	112.50	151	0.0079	4.70	3.7	0.0017	80% 250n-x	2.49	2.49	3.06	3.1	3.18	3.2	3.20	3.2	-0.52	OK	NE					
RE*ULID250	N-06F	N-06E	27	0.013	112.50	110.70	455	0.0040	4.91	12.6	0.0017	0%		2.49		3.1		3.2		3.2	-9.40	OK	NE					
RE*ULID250	N-06E	N-06D	27	0.013	110.70	108.40	451	0.0051	5.58	14.3	0.0017	10% 250n-x	0.31	2.80	0.38	3.4	0.40	3.6	0.40	3.6	-10.71	OK	NE					
	Section*		27	0.013		5.30	1057	0.0050	5.53	14.2	0.0050	0%		2.80		3.4		3.6		3.6	-10.59	OK	NE					OK
RE*ULID250	N-06D	N-06C	36	0.013	108.40	108.20	387	0.0005	2.15	9.8	0.0017	0%		2.80		3.4		3.6		3.6	-6.21	OK	NE					
RE*ULID250	N-06C	N-06B	36	0.013	108.20	108.10	282	0.0004	1.78	8.1	0.0017	0%		2.80		3.4		3.6		3.6	-4.53	OK	NE					
RE*ULID250	N-06B	N-06A	36	0.013	108.10	107.90	327	0.0006	2.34	10.7	0.0017	0%		2.80		3.4		3.6		3.6	-7.07	OK	NE					
RE*ULID250	N-06A	N-06	36	0.013	107.90	107.80	422	0.0002	1.46	6.6	0.0017	0%		2.80		3.4		3.6		3.6	-3.05	OK	NE					
RE*ULID250	N-06	N-05	36	0.013	107.80	107.70	180	0.0006	2.23	10.2	0.0017	0%		2.80		3.4		3.6		3.6	-6.57	OK	NE					
RE*ULID250	N-05	N-04	36	0.013	107.70	107.40	423	0.0007	2.52	11.5	0.0017	10% 250n-x	0.31	3.11	0.38	3.8	0.40	4.0	0.40	4.0	-7.49	OK	NE					
RE*ULID250	N-04	N-03	36	0.013	107.40	107.20	441	0.0005	2.01	9.2	0.0017	0%		3.11		3.8		4.0		4.0	-5.19	OK	NE					
RE*ULID250	N-03	N-02A	36	0.013	107.20	107.10	287	0.0003	1.77	8.1	0.0017	0%		3.11		3.8		4.0		4.0	-4.05	OK	NE					
	Section*		36	0.013		1.30	2749	0.0005	2.06	9.4	0.0005	0%		3.11		3.8		4.0		4.0	-5.38	OK	NE					OK
RE*ULID250	N-02A	N-02	36	0.013	107.10	105.90	135	0.0089	8.92	40.7	0.0089	100% ULID250S	6.49	9.60	7.20	11.0	7.59	11.6	7.69	11.7	-28.99	OK	NE					
	Section*		36	0.013		1.20	135	0.0089	8.92	40.7	0.0089	0%		9.60		11.0		11.6		11.7	-28.99	OK	NE					OK
RE*KENTX	R18G-07	R18G-06	54	0.013	106.00	105.60	625	0.0006	3.14	32.2	0.0006	25% xval-x	0.29	9.89	0.30	11.3	0.32	11.9	0.32	12.0	-20.17	OK	NE					
RE*KENTX	R18G-06	R18G-05	54	0.013	105.60	105.20	618	0.0006	3.15	32.4	0.0006	0%		9.89		11.3		11.9		12.0	-20.35	OK	NE	0.05	0.40	0.35	0.14	
RE*KENTX	R18G-05	R18G-04	54	0.013	105.20	105.40	74	-0.0027			0.0006	0%		9.89		11.3		11.9		12.0	12.01	39	2010	0.01	-0.20	-0.21	-0.21	ignore
RE*KENTX	R18G-04	R18G-03	54	0.013	105.40	105.00	619	0.0006	3.15	32.3	0.0006	0%		9.89		11.3		11.9		12.0	-20.33	OK	NE					
RE*KENTX to SI	R18G-03	R18A-57	54	0.013	105.00	104.10	664	0.0014	4.56	46.8	0.0014	0%		9.89		11.3		11.9		12.0	-34.82	OK	NE					
	Section		54	0.013		1.90	2600	0.0007	3.35	34.4	0.0007	0%		9.89		11.3		11.9		12.0	-22.38	OK	NE					OK
TO SOUTH INTERCEPTOR																												

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KENT PLANNING ZONE - REROUTING ALTERNATIVE
I&I LIMITED TO 1,100 GPAD ON NEW CONSTRUCTION

FACILITY	UP-STREAM MH #	DOWN-STREAM MH #	DIA. (IN)	Manning n	UP-STREAM INV ELEV	DOWN-STREAM INV ELEV	LENGTH (FT.)	SLOPE (FT/FT)	Vfull (FT/SEC)	Cap. (MGD)	Herrera New Slope	Modification Origin of Flow Percent	2010 Design Flow Inflow (MGD)	2010 Design Flow Total (MGD)	2020 Design Flow Inflow (MGD)	2020 Design Flow Total (MGD)	2030 Design Flow Inflow (MGD)	2030 Design Flow Total (MGD)	2050 Design Flow Inflow (MGD)	2050 Design Flow Total (MGD)	Excess (+) (MGD)	2050 Parallel Pipe (in.)	Decade Exceeded	Surcharge: any negative value in "BW elev" Δ elev FULL pipe	Δ elev	Δ−Δfull	BW elev (ft)	Proposed Diameter (inches)
												8% mill-x	0.89	0.89	0.98	1.0	1.04	1.0	1.08	1.1	1.08	#DIV/0!						
RE*GARISN	R18-30*	R18-29	24	0.013	378.04	377.67	110	0.0034	4.18	8.5	0.0034	55% gar-x	2.99	3.88	3.35	4.3	3.55	4.6	3.68	4.8	-3.72	OK	NE					
RE*GARISN	R18-29*	R18-28	12	0.013	377.67	347.35	206	0.1472	17.46	8.8	0.1472	0%		3.88		4.3		4.6		4.8	-4.09	OK	NE					
RE*GARISN	R18-28*	R18-27	12	0.013	347.35	326.23	195	0.1083	14.97	7.6	0.1083	0%		3.88		4.3		4.6		4.8	-2.83	OK	NE					
RE*GARISN	R18-27*	R18-26	12	0.013	326.23	302.19	152	0.1580	18.08	9.2	0.1580	2% gar-x	0.11	3.99	0.12	4.4	0.13	4.7	0.13	4.9	-4.27	OK	NE					
RE*GARISN	R18-26*	R18-25	12	0.013	302.19	276.30	335	0.0773	12.64	6.4	0.0052	0%		3.99		4.4		4.7		4.9	-1.52	OK	NE	15.03	25.89	10.86	10.89	
	Section*		12	0.013		101.74	999	0.1019	14.51	7.4	0.0052	0%		3.99		4.4		4.7		4.9	-2.46	OK	NE					OK
RE*GARISN	R18-25*	R18-24	18	0.013	275.59	273.89	325	0.0052	4.31	4.9	0.0051	0%		3.99		4.4		4.7		4.9	-0.02	OK	NE	1.68	1.70	0.02	-0.07	
RE*GARISN	R18-24*	R18-23	18	0.013	273.89	272.28	330	0.0049	4.16	4.7	0.0051	0%		3.99		4.4		4.7		4.9	0.14	6	2050	1.70	1.61	-0.09	-0.09	ignore
	Section*		18	0.013		3.31	655	0.0051	4.24	4.8	0.0051	0%		3.99		4.4		4.7		4.9	0.06	6	2050					ok
RE*GARISN	R18-23*	R18-22	12	0.013	272.28	254.65	235	0.0751	12.47	6.3	0.0751	5% gar-x	0.27	4.26	0.30	4.8	0.32	5.0	0.33	5.2	-1.09	OK	NE					
RE*GARISN	R18-22*	R18-21	12	0.013	254.65	223.41	210	0.1488	17.55	8.9	0.1488	7% gar-x	0.38	4.64	0.43	5.2	0.45	5.5	0.47	5.7	-3.20	OK	NE					
RE*GARISN	R18-21*	R18-20	12	0.013	219.39	202.44	69	0.2459	22.55	11.4	0.2459	0%		4.64		5.2		5.5		5.7	-5.73	OK	NE					
RE*GARISN	R18-20*	R18-19	12	0.013	202.44	190.27	97	0.1250	16.08	8.1	0.1250	0%		4.64		5.2		5.5		5.7	-2.46	OK	NE					
	Section*		12	0.013		82.01	611	0.1342	16.67	8.4	0.1342	0%		4.64		5.2		5.5		5.7	-2.75	OK	NE					OK
RE*GARISN	R18-19*	R18-18	15	0.013	190.27	188.11	202	0.0107	5.45	4.3	0.0107	0%		4.64		5.2		5.5		5.7	1.38	12	2010	3.74	2.16	-1.58	-1.58	12
RE*GARISN @ creek	R18-18*	R18-17	15	0.013	188.11	171.18	356	0.0475	11.51	9.1	0.0475	0%		4.64		5.2		5.5		5.7	-3.42	OK	NE					
	Section*		15	0.013		19.09	559	0.0342	9.75	7.7	0.0342	0%		4.64		5.2		5.5		5.7	-2.03	OK	NE					OK
RE*GARISN @ creek drop	R18-17*	R18-15	18	0.013	167.15	165.29	386	0.0048	4.14	4.7	0.0048	0%		4.64		5.2		5.5		5.7	0.98	12	2020	2.70	1.86	-0.84	-1.26	12
RE*GARISN @ creek	R18-15*	R18-14	18	0.013	165.29	163.34	339	0.0058	4.52	5.2	0.0058	0%		4.64		5.2		5.5		5.7	0.54	9	2020	2.37	1.95	-0.42	-0.42	ignore
RE*GARISN @ creek	R18-14*	R18-13	18	0.013	163.34	162.29	66	0.0159	7.51	8.6	0.0159	20% gar-x	1.09	5.73	1.22	6.4	1.29	6.8	1.34	7.0	-1.54	OK	NE					
	Section*		18	0.013		4.86	791	0.0061	4.67	5.3	0.0061	0%		5.73		6.4		6.8		7.0	1.71	12	2010					ok
RE*GARISN	R18-13*	R18-12A	24	0.013	161.70	161.47	101	0.0023	3.44	7.0	0.0023	0%		5.73		6.4		6.8		7.0	0.06	6	2050	0.23	0.23	0.00	-0.27	ignore
RE*GARISN	R18-12A*	R18-12	24	0.013	161.47	161.21	155	0.0017	2.96	6.0	0.0017	0%		5.73		6.4		6.8		7.0	1.04	15	2020	0.36	0.26	-0.10	-0.27	ignore
RE*GARISN	R18-12*	R18-11	24	0.013	161.21	160.79	259	0.0016	2.91	5.9	0.0016	0%		5.73		6.4		6.8		7.0	1.13	15	2020	0.59	0.42	-0.17	-0.17	ignore
	Section*		24	0.013		0.91	515	0.0018	3.04	6.2	0.0018	0%		5.73		6.4		6.8		7.0	0.88	12	2020					ok
RE*GARISN	R18-11*	R18-10	18	0.013	160.79	130.78	356	0.0842	17.30	19.7	0.0842	11% gar-x	0.60	6.33	0.67	7.1	0.71	7.5	0.74	7.8	-11.96	OK	NE					
RE*GARISN drop	R18-10*	R18-09	18	0.013	118.98	115.51	260	0.0133	6.88	7.8	0.0133	0%		6.33		7.1		7.5		7.8	-0.08	OK	NE					
	Section*		18	0.013		45.28	617	0.0734	16.15	18.4	0.0133	0%		6.33		7.1		7.5		7.8	-10.65	OK	NE					OK
RE*GARISN	R18-09*	R18-08	24	0.013	115.51	115.09	420	0.0010	2.29	4.6	0.0012	34% c5e-x	0.43	6.76	0.46	7.5	0.49	8.0	0.49	8.3	3.63	24	2010					
RE*GARISN	R18-08*	R18-07	24	0.013	115.09	114.54	413	0.0013	2.64	5.3	0.0012	0%		6.76		7.5		8.0		8.3	2.92	21	2010					
RE*GARISN	R18-07*	R18-06	24	0.013	114.54	114.29	94	0.0027	3.72	7.5	0.0012	0%		6.76		7.5		8.0		8.3	0.72	12	2030					
RE*GARISN	R18-06*	R18-04	24	0.013	114.29	114.42	134	-0.0010			0.0012	0%		6.76		7.5		8.0		8.3	8.26	30	2010					
RE*GARISN	R18-04*	R18-03	24	0.013	114.42	113.88	418	0.0013	2.59	5.3	0.0012	0%		6.76		7.5		8.0		8.3	3.00	21	2010					
RE*GARISN	R18-03*	R18-02A	24	0.013	113.84	113.39	350	0.0013	2.59	5.2	0.0012	0%		6.76		7.5		8.0		8.3	3.01	21	2010					
RE*GARISN	R18-02A*	R18-02	24	0.013	113.39	113.29	96	0.0010	2.33	4.7	0.0012	0%		6.76		7.5		8.0		8.3	3.54	21	2010					
RE*GARISN	R18-02*	R18-01	24	0.013	113.29	112.63	365	0.0018	3.07	6.2	0.0012	33% c5e-x	0.42	7.17	0.45	8.0	0.47	8.5	0.48	8.7	2.51	21	2010					
RE*GARISN	R18-01*	R18-57I-A	24	0.013	112.63	112.50	306	0.0004	1.49	3.0	0.0012	0%		7.17		8.0		8.5		8.7	5.72	27	2010					
RE*GARISN	R18-57I-A	57I	24	0.013	112.50	112.40	19	0.0053	5.24	10.6	0.0012	0%		7.17		8.0		8.5		8.7	-1.88	OK	NE					
	Section*		24	0.013		3.11	2614	0.0012	2.49	5.0	0.0133	0%		7.17		8.0		8.5		8.7	3.69	15	2010					15
RE*ULID1/5	57I	57H	24	0.013	112.40	112.00	404	0.0010	2.27	4.6	0.0018	0%		7.17		8.0		8.5		8.7	4.13	21	2010					
RE*ULID1/5	57H	57G	24	0.013	112.00	111.50	403	0.0012	2.54	5.2	0.0018	0%		7.17		8.0		8.5		8.7	3.58	21	2010					
RE*ULID1/5	57G	57F	24	0.013	111.50	111.00	351	0.0014	2.72	5.5	0.0018	33% c5e-x	0.42	7.59	0.45	8.4	0.47	8.9	0.48	9.2	3.69	21	2010					
RE*ULID1/5	57F	57E	24	0.013	111.00	110.60	350	0.0011	2.44	4.9	0.0018	0%		7.59		8.4		8.9		9.2	4.27	21	2010					
RE*ULID1/5	57E	57D	24	0.013	110.60	110.00	400	0.0015	2.80	5.7	0.0018	0%		7.59		8.4		8.9		9.2	3.55	21	2010					
RE*ULID1/5	57D	57C	24	0.013	110.00	109.40	400	0.0015	2.80	5.7	0.0018	0%		7.59		8.4		8.9		9.2	3.55	21	2010					
RE*ULID1/5	57C	57B	24	0.013	109.40	109.30	130	0.0008	2.00	4.1	0.0018	0%		7.59		8.4		8.9		9.2	5.16	24	2010					
RE*ULID1/5	57B	57AA	24	0.013	109.30	108.90	217	0.0018	3.10	6.3	0.0018	0%		7.59		8.4		8.9		9.2	2.93	21	2010					
RE*ULID1/5	57AA	57A	24	0.013	108.90	108.50	268	0.0015	2.79	5.7	0.0018	0%		7.59		8.4		8.9		9.2	3.56	21	2010					
RE*ULID1/5	57A	57	24	0.013	108.50	106.40	500	0.0042	4.68	9.5	0.0018	0%		7.59		8.4		8.9		9.2	-0.27	OK	NE					
	Section		24	0.013		6.00	3423	0.0018	3.02	6.1	0.0018	0%		7.59		8.4		8.9		9.2	3.09	21	2010					21
TO ULID 1/5.#57																												

Task 250 Report:
KENT PLANNING ZONE - REROUTING ALTERNATIVE
I&I LIMITED TO 1,100 GPAD ON NEW CONSTRUCTION

FACILITY	UP-STREAM MH #	DOWN-STREAM MH #	DIA. (IN)	Manning n	UP-STREAM INV ELEV	DOWN-STREAM INV ELEV	LENGTH (FT.)	SLOPE (FT/FT)	Vfull (FT/SEC)	Cap. (MGD)	Herrera New Slope	Modification Origin of Flow Percent	2010 Design Flow Inflow (MGD)	2010 Design Flow Total (MGD)	2020 Design Flow Inflow (MGD)	2020 Design Flow Total (MGD)	2030 Design Flow Inflow (MGD)	2030 Design Flow Total (MGD)	2050 Design Flow Inflow (MGD)	2050 Design Flow Total (MGD)	Excess (+) (MGD)	2050 Parallel Pipe (in.)	Decade Exceeded	Surcharge: any negative value in "BW elev" Δ elev FULL pipe	Δ elev	Δ−Δfull	BW elev (ft)	Proposed Diameter (inches)
												25% mill-x	2.77	2.77	3.06	3.1	3.26	3.3	3.37	3.4			X					
RE*MILL	R18F-37A	R18F-37	27	0.013	444.60	442.00	440	0.0059	6.00	15.4	0.0149	100% mill-e	2.36	5.13	2.86	5.9	3.06	6.3	3.23	6.6	-8.80	OK	NE					
RE*MILL	R18F-37	R18F-36	21	0.013	442.00	434.70	428	0.0171	8.63	13.4	0.0149	0%		5.13		5.9		6.3		6.6	-6.78	OK	NE					
RE*MILL	R18F-36	R18F-35	21	0.013	434.70	428.90	335	0.0173	8.69	13.5	0.0149	0%		5.13		5.9		6.3		6.6	-6.89	OK	NE					
RE*MILL	R18F-35	R18F-34	21	0.013	428.90	423.00	340	0.0174	8.70	13.5	0.0149	0%		5.13		5.9		6.3		6.6	-6.90	OK	NE					
RE*MILL	R18F-34	R18F-33	21	0.013	423.00	417.00	358	0.0168	8.55	13.3	0.0149	0%		5.13		5.9		6.3		6.6	-6.67	OK	NE					
RE*MILL	R18F-33	R18F-32	21	0.013	417.00	411.00	358	0.0168	8.55	13.3	0.0149	0%		5.13		5.9		6.3		6.6	-6.67	OK	NE					
	Section*		21	0.013		33.60	2259	0.0149	8.06	12.5	0.0149	0%		5.13		5.9		6.3		6.6	-5.90	OK	NE					OK
RE*MILL	R18F-32	R18F-31	24	0.013	411.00	408.50	408	0.0061	5.65	11.5	0.0060	0%		5.13		5.9		6.3		6.6	-4.85	OK	NE					
RE*MILL	R18F-31	R18F-30	24	0.013	408.50	406.70	307	0.0059	5.53	11.2	0.0060	0%		5.13		5.9		6.3		6.6	-4.60	OK	NE					
RE*MILL	R18F-30	R18F-29	24	0.013	406.70	404.80	320	0.0059	5.56	11.3	0.0060	0%		5.13		5.9		6.3		6.6	-4.67	OK	NE					
	Section*		24	0.013		6.20	1035	0.0060	5.59	11.3	0.0060	0%		5.13		5.9		6.3		6.6	-4.72	OK	NE					OK
RE*MILL	R18F-29	R18F-28	21	0.013	404.80	400.50	359	0.0120	7.23	11.2	0.0519	12% mill-x	1.33	6.46	1.47	7.4	1.56	7.9	1.62	8.2	-3.00	OK	NE					
RE*MILL	R18F-28	R18F-27A	18	0.013	400.50	391.80	231	0.0377	11.57	13.2	0.0519	0%		6.46		7.4		7.9		8.2	-4.96	OK	NE					
RE*MILL	R18F-27A	R18F-27	18	0.013	391.80	388.20	80	0.0450	12.64	14.4	0.0519	0%		6.46		7.4		7.9		8.2	-6.19	OK	NE					
RE*MILL	R18F-27	R18F-26	18	0.013	388.20	371.10	379	0.0451	12.66	14.4	0.0519	0%		6.46		7.4		7.9		8.2	-6.21	OK	NE					
RE*MILL	R18F-26	R18F-25	18	0.013	371.10	348.40	367	0.0619	14.82	16.9	0.0519	0%		6.46		7.4		7.9		8.2	-8.67	OK	NE					
RE*MILL	R18F-25	R18F-24	18	0.013	348.40	334.30	318	0.0443	12.55	14.3	0.0519	0%		6.46		7.4		7.9		8.2	-6.09	OK	NE					
RE*MILL	R18F-24	R18F-23	18	0.013	334.30	309.00	405	0.0625	14.90	17.0	0.0519	0%		6.46		7.4		7.9		8.2	-8.76	OK	NE					
RE*MILL	R18F-23	R18F-22	18	0.013	309.00	278.20	395	0.0780	16.64	19.0	0.0519	0%		6.46		7.4		7.9		8.2	-10.75	OK	NE					
RE*MILL	R18F-22	R18F-21	18	0.013	278.20	263.00	195	0.0779	16.64	19.0	0.0519	0%		6.46		7.4		7.9		8.2	-10.75	OK	NE					
RE*MILL	R18F-21	R18F-20A	18	0.013	263.00	256.80	165	0.0376	11.56	13.2	0.0519	0%		6.46		7.4		7.9		8.2	-4.95	OK	NE					
RE*MILL	R18F-20A	R18F-20	18	0.013	256.80	252.30	90	0.0500	13.33	15.2	0.0519	0%		6.46		7.4		7.9		8.2	-6.97	OK	NE					
RE*MILL	R18F-20	R18F-19	18	0.013	252.30	238.80	292	0.0462	12.82	14.6	0.0519	0%		6.46		7.4		7.9		8.2	-6.39	OK	NE					
RE*MILL	R18F-19	R18F-18	18	0.013	238.80	216.90	347	0.0631	14.97	17.1	0.0519	0%		6.46		7.4		7.9		8.2	-8.85	OK	NE					
	Section*		18	0.013		187.90	3623	0.0519	13.58	15.5	0.0519	0%		6.46		7.4		7.9		8.2	-7.25	OK	NE					OK
RE*MILL	R18F-18	R18F-17	21	0.013	216.90	213.00	290	0.0134	7.66	11.9	0.0442	0%		6.46		7.4		7.9		8.2	-3.66	OK	NE					
RE*MILL	R18F-17	R18F-16A	18	0.013	213.00	184.00	447	0.0649	15.18	17.3	0.0442	0%		6.46		7.4		7.9		8.2	-9.09	OK	NE					
RE*MILL	R18F-16A	R18F-16	18	0.013	184.00	182.70	14	0.0929	18.16	20.7	0.0442	0%		6.46		7.4		7.9		8.2	-12.49	OK	NE					
RE*MILL	R18F-16	R18F-15	18	0.013	182.70	174.60	118	0.0686	15.62	17.8	0.0442	0%		6.46		7.4		7.9		8.2	-9.58	OK	NE					
	Section		18	0.013		38.40	869	0.0442	12.53	14.3	0.0442	0%		6.46		7.4		7.9		8.2	-6.06	OK	NE					OK
RE*MILL	R18F-15	R18F-14	24	0.013	174.60	172.20	380	0.0063	5.74	11.6	0.0347	0%		6.46		7.4		7.9		8.2	-3.41	OK	NE					
RE*MILL	R18F-14	R18F-13	18	0.013	172.20	168.20	143	0.0280	9.97	11.4	0.0347	0%		6.46		7.4		7.9		8.2	-3.14	OK	NE					
RE*MILL	R18F-13	R18F-12	18	0.013	168.20	164.10	140	0.0293	10.20	11.6	0.0347	0%		6.46		7.4		7.9		8.2	-3.40	OK	NE					
RE*MILL	R18F-12	R18F-11	18	0.013	164.10	154.80	149	0.0624	14.89	17.0	0.0347	0%		6.46		7.4		7.9		8.2	-8.75	OK	NE					
RE*MILL	R18F-11	R18F-10	18	0.013	154.80	136.20	295	0.0631	14.97	17.1	0.0347	0%		6.46		7.4		7.9		8.2	-8.84	OK	NE					
	Section*		18	0.013		38.40	1107	0.0347	11.10	12.7	0.0347	0%		6.46		7.4		7.9		8.2	-4.43	OK	NE					OK
RE*MILL	R18F-10	R18F-09	21	0.013	136.20	126.30	439	0.0226	9.92	15.4	0.0226	0%		6.46		7.4		7.9		8.2	-7.17	OK	NE					
	Section*		21	0.013		9.90	439	0.0226	9.92	15.4	0.0226	0%		6.46		7.4		7.9		8.2	-7.17	OK	NE					OK
RE*MILL	R18F-09	R18F-07	30	0.013	126.30	125.00	465	0.0028	4.43	14.0	0.0024	22% mill-x	2.44	8.90	2.69	10.1	2.87	10.8	2.97	11.2	-2.84	OK	NE	0.82	1.30	0.48	0.32	
RE*MILL	R18F-07	R18F-06	30	0.013	125.00	124.40	424	0.0014	3.15	10.0	0.0024	0%		8.90		10.1		10.8		11.2	1.21	15	2020	0.75	0.60	-0.15	-0.15	ignore
												-100% MILL #6	-8.90		-10.08		-10.75		-11.19				X					
RE*MILL	R18F-06	R18F-05	30	0.013	124.40	123.40	483	0.0021	3.81	12.1	0.0024	25% mill-x	2.77	2.77	3.06	3.1	3.26	3.3	3.37	3.4	-8.70	OK	NE					
RE*MILL	R18F-05	R18F-04	30	0.013	123.40	122.00	547	0.0026	4.24	13.4	0.0024	0%		2.77		3.1		3.3		3.4	-10.05	OK	NE					
RE*MILL	R18F-04	R18F-03	30	0.013	122.00	120.60	540	0.0026	4.27	13.5	0.0024	0%		2.77		3.1		3.3		3.4	-10.14	OK	NE					
RE*MILL	R18F-03	R18F-02C	30	0.013	120.60	120.40	93	0.0022	3.88	12.3	0.0024	0%		2.77		3.1		3.3		3.4	-8.93	OK	NE					
RE*MILL	R18F-02C	R18F-02B	30	0.013	120.40	119.30	515	0.0021	3.87	12.3	0.0024	0%		2.77		3.1		3.3		3.4	-8.89	OK	NE					
RE*MILL	R18F-02B	R18F-02A	30	0.013	119.30	118.80	182	0.0027	4.39	13.9	0.0024	0%		2.77		3.1		3.3		3.4	-10.54	OK	NE					
RE*MILL	R18F-02A	R18F-02	30	0.013	118.80	118.70	67	0.0015	3.24	10.3	0.0024	0%		2.77		3.1		3.3		3.4	-6.88	OK	NE					
RE*MILL	R18F-02	R18F-01	30	0.013	118.70	117.50	375	0.0032	4.74	15.0	0.0024	0%		2.77		3.1		3.3		3.4	-11.64	OK	NE	0.06	1.20	1.14	1.03	
	Section*		30	0.013		8.80	3691	0.0024	4.09	13.0	0.0024	0%		2.77		3.1		3.3		3.4	-9.58	OK	NE					OK

Task 250 Report:
KENT PLANNING ZONE - REROUTING ALTERNATIVE
I&I LIMITED TO 1,100 GPAD ON NEW CONSTRUCTION

FACILITY	UP-STREAM MH #	DOWN-STREAM MH #	DIA. (IN)	Manning n	UP-STREAM INV ELEV	DOWN-STREAM INV ELEV	LENGTH (FT.)	SLOPE (FT/FT)	Vfull (FT/SEC)	Cap. (MGD)	Herrera New Slope	Modification Origin of Flow Percent	2010 Design Flow Inflow (MGD)	2010 Design Flow Total (MGD)	2020 Design Flow Inflow (MGD)	2020 Design Flow Total (MGD)	2030 Design Flow Inflow (MGD)	2030 Design Flow Total (MGD)	2050 Design Flow Inflow (MGD)	2050 Design Flow Total (MGD)	Excess (+) (MGD)	2050 Parallel Pipe (in.)	Decade Exceeded	Surcharge: any negative value in "BW elev" Δ elev FULL pipe	Δ elev	Δ−Δfull	BW elev (ft)	Proposed Diameter (inches)
RE*ULID1/5	R18F-01	75	30	0.013	117.50	117.60	43	-0.0023			0.0015	0%		2.77		3.1		3.3		3.4	3.37	21	2010	0.01	-0.10	-0.11	-0.11	ignore
RE*ULID1/5	75	74AA	30	0.013	117.60	117.50	11	0.0091	7.99	25.3	0.0015	0%		2.77		3.1		3.3		3.4	-21.92	OK	NE					
RE*ULID1/5	74AA	74	30	0.013	117.50	117.40	109	0.0009	2.54	8.0	0.0015	0%		2.77		3.1		3.3		3.4	-4.67	OK	NE					
RE*ULID1/5	74	73	30	0.013	117.40	116.80	348	0.0017	3.48	11.0	0.0015	0%		2.77		3.1		3.3		3.4	-7.65	OK	NE					
RE*ULID1/5	73	72	30	0.013	116.80	116.10	400	0.0018	3.50	11.1	0.0015	0%		2.77		3.1		3.3		3.4	-7.72	OK	NE					
RE*ULID1/5	72	71	30	0.013	116.10	115.60	315	0.0016	3.34	10.6	0.0015	0%		2.77		3.1		3.3		3.4	-7.20	OK	NE					
RE*ULID1/5	71	70	30	0.013	115.60	115.20	270	0.0015	3.22	10.2	0.0015	0%		2.77		3.1		3.3		3.4	-6.84	OK	NE					
RE*ULID1/5	70	69	30	0.013	115.20	114.40	494	0.0016	3.37	10.7	0.0015	0%		2.77		3.1		3.3		3.4	-7.30	OK	NE					
RE*ULID1/5	69	68	30	0.013	114.40	113.70	485	0.0014	3.18	10.1	0.0015	0%		2.77		3.1		3.3		3.4	-6.70	OK	NE					
RE*ULID1/5 @SR167	68	67	30	0.013	113.70	113.50	123	0.0016	3.38	10.7	0.0015	0%		2.77		3.1		3.3		3.4	-7.32	OK	NE					
	Section		30	0.013		4.00	2598	0.0015	3.29	10.4	0.0015	0%		2.77		3.1		3.3		3.4	-7.04	OK	NE					OK
RE*ULID1/5	67	66	27	0.013	113.50	113.00	296	0.0017	3.21	8.2	0.0016	0%		2.77		3.1		3.3		3.4	-4.86	OK	NE					
RE*ULID1/5	66	65	27	0.013	113.00	112.40	412	0.0015	2.98	7.6	0.0016	0% xval-x		2.77		3.1		3.3		3.4	-4.27	OK	NE					
RE*ULID1/5	65	64	27	0.013	112.40	111.70	467	0.0015	3.02	7.8	0.0016	0%		2.77		3.1		3.3		3.4	-4.38	OK	NE					
RE*ULID1/5	64	63	27	0.013	111.70	111.20	258	0.0019	3.44	8.8	0.0016	0%		2.77		3.1		3.3		3.4	-5.45	OK	NE					
RE*ULID1/5	63	62	27	0.013	111.20	110.50	404	0.0017	3.25	8.3	0.0016	8% mill-x	0.89	3.66	0.98	4.0	1.04	4.3	1.08	4.5	-3.89	OK	NE					
RE*ULID1/5	62	61	27	0.013	110.50	110.00	322	0.0016	3.08	7.9	0.0016	0%		3.66		4.0		4.3		4.5	-3.44	OK	NE					
	Section		27	0.013		3.50	2159	0.0016	3.14	8.1	0.0016	0%		3.66		4.0		4.3		4.5	-3.61	OK	NE					OK
RE*ULID1/5	61	60	30	0.013	110.00	109.20	469	0.0017	3.46	11.0	0.0013	0%		3.66		4.0		4.3		4.5	-6.51	OK	NE					
RE*ULID1/5	60	59	30	0.013	109.20	108.70	430	0.0012	2.86	9.0	0.0013	0%		3.66		4.0		4.3		4.5	-4.59	OK	NE					
RE*ULID1/5	59	58	30	0.013	108.70	108.10	504	0.0012	2.89	9.2	0.0013	0%		3.66		4.0		4.3		4.5	-4.70	OK	NE					
RE*ULID1/5	58	57	30	0.013	108.10	107.60	419	0.0012	2.89	9.2	0.0013	0%		3.66		4.0		4.3		4.5	-4.71	OK	NE					
	Section		30	0.013		2.40	1822	0.0013	3.04	9.6	0.0013	0%		3.66		4.0		4.3		4.5	-5.18	OK	NE					OK
RE*ULID1/5	57	R18-30	42	0.013	106.60	106.40	404	0.0005	2.33	14.5	0.0004	100% ULID1/5 57A	7.59	11.24	8.43	12.5	8.93	13.2	9.22	13.7	-0.81	OK	NE	0.18	0.20	0.02	-0.05	ignore
RE*ULID1/5	56	55	42	0.013	106.40	106.30	393	0.0003	1.67	10.4	0.0004	0%		11.24		12.5		13.2		13.7	3.29	27	2010	0.17	0.10	-0.07	-0.07	ignore
RE*ULID1/5	55	54	42	0.013	106.30	106.10	432	0.0005	2.26	14.0	0.0004	0%		11.24		12.5		13.2		13.7	-0.34	OK	NE					
RE*ULID1/5	54	53	42	0.013	106.10	105.90	442	0.0005	2.23	13.8	0.0004	0%		11.24		12.5		13.2		13.7	-0.18	OK	NE					
	Section*		42	0.013		0.70	1671	0.0004	2.15	13.3	0.0004	0%		11.24		12.5		13.2		13.7	0.35	12	2050					ok
RE*ULID1/5	53	52	42	0.013	105.90	103.70	436	0.0050	7.45	46.2	0.0050	0%		11.24		12.5		13.2		13.7	-32.56	OK	NE					
	Section*		42	0.013		2.20	436	0.0050	7.45	46.2	0.0050	0%		11.24		12.5		13.2		13.7	-32.56	OK	NE					OK
RE*ULID1/2	52	51	72	0.012	103.70	103.60	353	0.0003	2.74	50.0	0.0003	100% KXVAL	28.61	39.86	34.27	46.7	36.05	49.3	36.95	50.6	0.66	15	2050					
																			123.52	123.5 check								

*RWSP pipe or section data revised.

APPENDIX 250-E

SOOS PLANNING ZONE ALTERNATIVES WITH I/I HELD TO 1,100 GPAD ON NEW CONSTRUCTION

Soos Planning Zone
With I/I Limited to 1,100 gpad on New Construction

Facility	Flowrate (mgd)	Total Head TDH (ft)	Upstream Elevation (ft)	Downstream or High Point Elevation (ft)	Downstream Invert Elevation (ft)	Static Head (ft)	Forcemain Diameter (inches)	Forcemain Length (ft)	HDR $ ($/LF)	Forcemain headloss w/ C=140 (ft)	Forcemain Velocity (fps)	Gravity Main Diameter (inches)	Gravity Main Length (ft)	calc'd slope	design slope	HDR $ ($/LF)	Preliminary Estimated Conveyance Cost (dollars)
	ALTERNATIVE 1		Criteria: TDH >200 ft & 8 fps velocity							140					0.013		
PS B	2.4	226	300	460	370		12			65.6	4.69						$1,900,000
Fm B		182				160	15	11,600	$398	22.1	3.00						$4,616,800
Gravity B		169					18			9.1	2.09	12	6,900	0.0130	0.0130	$363	$2,504,700
																	$9,021,500
PS C	25.9	207	360	490	410		21			76.8	9.71						$5,300,000
Fm C-parallel	15.1	170				130	24	6,800	$491	40.1	7.43						$3,338,800
Gravity C		153					27			22.6	5.87	24	6,500	0.0123	0.0120	$491	$3,191,500
	10.8																$11,830,300
PT D																	
Fm D																	
Gravity D																	
PS E	7.2	301	360	490	410		12			171.5	6.84						$1,900,000
Fm E-parallel	3.5	188				130	15	15,100	$398	57.9	4.38						$6,009,800
Gravity E-parallel		154					18			23.8	3.04						
	3.7																$7,909,800
PS F	9.7	410	390	470	360		12			380.0	7.80						$2,200,000
Fm F-parallel	4.0	158				30	15	26,300	$398	128.3	4.99						$10,467,400
Gravity F-parallel		83		(Low Pt @ 340)			18			52.8	3.46						
	5.8																$12,667,400
PS G: no change																	
PS H	4.0	217	533	581	357		8			41.4	10.66						$1,800,000
Fm H	2.4	190				176	10	1,000	$348	14.0	6.82						$348,000
Gravity G-parallel		182					12			5.8	4.74	18	32,758	0.0068	0.00155	$418	$13,692,844
	1.6																$15,840,844
		5 pump stations		new pump stations:		5		60,800					46,158		ALTERNATIVE 1		**$57,270,000**
	ALTERNATIVE 2		Criteria: TDH >200 ft & 8 fps velocity														
PS B	23.6	213	300	460	370		30			52.9	7.45						$10,000,000
Fm B		193				160	33	11,600	$645	33.3	6.15						$7,482,000
Gravity B		182					36			21.8	5.17	30	6,900	0.0130	0.0130	$561	$3,870,900
																	$21,352,900
PS C	4.7	263	360	490	410		12			132.5	9.16						
Fm C		175				130	15	6,800	$398	44.7	5.86						$2,706,400
Gravity C		148					18			18.4	4.07	18	6,500	0.0123	0.0120	$418	$2,717,000
																	$5,423,400
													USE EXISTING LS #10 & PIPES				-$5,423,400
PS D	21.2	138	360	450	300		24			47.7	10.46						$8,400,000
Fm D		117				90	27	4,300	$510	26.9	8.27						$2,193,000
Gravity D		106					30			16.1	6.70	24	6,300	0.0238	0.0230	$491	$3,093,300
																	$13,686,300
PT E	13.7		367	325													
Fm E																	
Gravity E												39	10,000	0.0325	0.00075	$735	$7,350,000
													change due to topography				$7,350,000
PS F	9.7	343	390	470	360		10			263.1	11.23		-				$2,200,000
Fm F-parallel	4.0	188				80	12	7,500	$363	108.4	7.80						$2,722,500
Gravity F		117					15			36.6	4.99	21	11,000	0.0100	0.0100	$439	$4,829,000
	5.8												change due to topography				$9,751,500
PS G: no change																	
PS H	4.0	216	533	581	357		8			40.1	10.48		-				$1,800,000
Fm H	2.4	190				176	10	1,000	$348	13.5	6.71						$348,000
Gravity H-parallel		182					12			5.6	4.66	18	32,758	0.0068	0.00155	$418	$13,692,844
	1.64																$15,840,844
		5 pump stations		new pump stations:		4		31,200					73,458		ALTERNATIVE 2		**$67,980,000**

Basins and 2050 flow (mgd) routed through each pump station

ALTERNATIVE 1

aub3-ne	1.73	sss-x	1.71	sss-x	0.30			ls-11n	3.21	lks-x	1.72	ls-11s	4.01
		mill-q	0.28	scrk-x	7.16					ls-15	8.00		
		ssm-q	0.39	ls-14	0.84								
				sss-ne	0.16								
				jenk-r	0.51								
PS C	25.9			PS E	7.2								
PS B	2.4			PS F	9.72			PS H	4.01				
PT A	30.0	**PS B**	2.4	**PS C**	25.9	**PT D**		**PS E**	7.2	**PS F**	9.7	**PS H**	4.0
mill-e	3.23	through Mill Creek Interceptor											
sss-sw	1.08	through Auburn											

ALTERNATIVE 2

aub3-ne	1.73	sss-x	1.71	scrk-x	4.65	sss-x	0.30			lks-x	1.72	ls-11s	4.01
		mill-q	0.28			scrk-x	2.50			ls-15	8.00		
		ssm-q	0.39			ls-14	0.84						
						sss-ne	0.16						
						jenk-r	0.51						
						ls-11n	3.21						
PS B	23.6							PS H	4.0				
PS C	4.7	PT D	21.25			PT E	13.72	PS F	9.72				
PT A	30.0	**PS B**	23.6	**PS C**	4.7	**PT D**	21.2	**PT E**	13.7	**PS F**	9.7	**PS H**	4.0
mill-e	3.23	through Mill Creek Interceptor											
sss-sw	1.08	through Auburn											

SOOS PLANNING ZONE
TASK 250 ALTERNATIVES
With I/I Limited to 1,100 gpad on New Construction

Soos Planning Zone
With I/I Limited to 1,100 gpad on New Construction

Facility	Flowrate (mgd)	Total Head TDH (ft)	Upstream Elevation (ft)	Downstream or High Point Elevation (ft)	Downstream Invert Elevation (ft)	Static Head (ft)	Forcemain Diameter (inches)	Forcemain Length (ft)	HDR $ ($/LF)	Forcemain headloss w/ C=140 (ft)	Forcemain Velocity (fps)	Gravity Main Diameter (inches)	Gravity Main Length (ft)	calc'd slope	design slope	HDR $ ($/LF)	Preliminary Estimated Conveyance Cost (dollars)
	ALTERNATIVE 3		Criteria: TDH >200 ft & 8 fps velocity														
PS B	2.4	186	300	450	360		12			35.6	4.69						$1,900,000
Fm B		162				150	15	6,300	$398	12.0	3.00						$2,507,400
Gravity B		155					18			5.0	2.09	12	4,300	0.0209	0.0200	$363	$1,560,900
																	$5,968,300
PS C	4.7	263	360	490	410		12			132.5	9.16						
Fm C		175				130	15	6,800	$398	44.7	5.86						$2,706,400
Gravity C		148					18			18.4	4.07	18	6,500	0.0123	0.0120	$418	$2,717,000
																	$5,423,400
														USE EXISTING LS #10 & PIPES			-$5,423,400
PS D	23.6	207	360	480	360		30			86.7	7.45						$10,000,000
Fm D		175				120	33	19,000	$645	54.5	6.15						$12,255,000
Gravity D		156					36			35.7	5.17	27	6,700	0.0179	0.0170	$510	$3,417,000
																	$25,672,000
PT E	13.7		367	325													
Fm E																	
Gravity E												39	10,000	0.0325	0.00075	$735	$7,350,000
														change due to topography			$7,350,000
PS F	9.7	343	390	470	360		10			263.1	11.23						$2,200,000
Fm F-parallel	4.0	188				80	12	7,500	$363	108.4	7.80						$2,722,500
Gravity F		117					15			36.6	4.99	24	11,000	0.0100	0.0052	$491	$5,401,000
	5.8													change due to topography			$10,323,500
PS G: no change																	
PS H	4.0	217	533	581	357		8			41.4	10.66						$1,800,000
Fm H	2.4	190				176	10	1,000	$348	14.0	6.82						$348,000
Gravity H-parallel		182					12			5.8	4.74	18	32,758	0.0068	0.00155	$418	$13,692,844
	1.6																$15,840,844
		5 pump stations		new pump stations:		4		40,600					71,258		ALTERNATIVE 3		**$65,150,000**
	ALTERNATIVE 4		Criteria: TDH >200 ft & 8 fps velocity														
PS B	2.4	226	300	460	370		12			65.6	4.69						$1,900,000
Fm B		182				160	15	11,600	$398	22.1	3.00						$4,616,800
Gravity B		169					18			9.1	2.09	12	6,900	0.0130	0.0130	$363	$2,504,700
																	$9,021,500
PS C	4.7	263	360	490	410		12			132.5	9.16						
Fm C		175				130	15	6,800	$398	44.7	5.86						$2,706,400
Gravity C		148					18			18.4	4.07	18	6,500	0.0123	0.0120	$418	$2,717,000
																	$5,423,400
														USE EXISTING LS #10 & PIPES			-$5,423,400
PS D	21.2	239	360	480	360		27			118.9	8.27						$8,400,000
Fm D		191				120	30	19,000	$561	71.2	6.70						$10,659,000
Gravity D		165					33			44.8	5.53	27	6,700	0.0179	0.0170	$510	$3,417,000
																	$22,476,000
PT E	13.7		367	325													
Fm E																	
Gravity E												39	10,000	0.0325	0.00075	$735	$7,350,000
														change due to topography			$7,350,000
PS F	9.7	343	390	470	360		10			263.1	11.23						$2,200,000
Fm F-parallel	4.0	188				80	12	7,500	$363	108.4	7.80						$2,722,500
Gravity F		117					15			36.6	4.99	24	11,000	0.0100	0.0052	$491	$5,401,000
	5.8													change due to topography			$10,323,500
PS G: no change																	
PS H	4.0	217	533	581	357		8			41.4	10.66		-				$1,800,000
Fm H	2.4	190				176	10	1,000	$348	14.0	6.82						$348,000
Gravity H-parallel		182					12			5.8	4.74	18	32,758	0.0068	0.00155	$418	$13,692,844
	1.6																$15,840,844
		5 pump stations		new pump stations:		4		45,900					73,858		ALTERNATIVE 4		**$65,010,000**

Basins and 2050 flow (mgd) routed through each pump station

ALTERNATIVE 3

aub3-ne	1.73	sss-x	1.71	scrk-x	4.65	sss-x	0.30			lks-x	1.72	ls-11s	4.01
		mill-q	0.28			scrk-x	2.50			ls-15	8.00		
		ssm-q	0.39			ls-14	0.84						
						sss-ne	0.16						
						jenk-r	0.51						
						ls-11n	3.21						
PS C	4.7					PS B	2.38	PS H	4.0				
PT D	23.63					PT E	13.72	PS F	9.72				
PT A	30.0	**PS B**	2.4	**PS C**	4.7	**PT D**	23.6	**PT E**	13.7	**PS F**	9.7	**PS H**	4.0
mill-e	3.23	through Mill Creek Interceptor											
sss-sw	1.08	through Auburn											

ALTERNATIVE 4

aub3-ne	1.73	sss-x	1.71	scrk-x	4.65	sss-x	0.30			lks-x	1.72	ls-11s	4.01
		mill-q	0.28			scrk-x	2.50			ls-15	8.00		
		ssm-q	0.39			ls-14	0.84						
						sss-ne	0.16						
						jenk-r	0.51						
						ls-11n	3.21						
PS C	4.7												
PS B	2.4							PS H	4.0				
PT D	21.25					PT E	13.72	PS F	9.72				
PT A	30.0	**PS B**	2.4	**PS C**	4.7	**PT D**	21.2	**PT E**	13.7	**PS F**	9.7	**PS H**	4.0
mill-e	3.23	through Mill Creek Interceptor											
sss-sw	1.08	through Auburn											

APPENDIX 250-F

AUBURN PLANNING ZONE PARALLEL ALTERNATIVE FLOW ROUTING WITH 20% I/I REDUCTION EFFECTIVE IN 2000

Task 250 Report:
AUBURN PLANNING ZONE - PARALLEL ALTERNATIVE
20% I/I reduction effective in 200(

Facility	Up-stream MH #	Down-stream MH #	Dia. (in.)	Manning n	Up-stream Inv Elev	Down-stream Inv Elev	Length (ft)	Slope (ft/ft)	Vfull (fps)	Cap. (mgd)	Herrera Proposed Slope	Modification Origin of Flow Percent	2010 Design Flow Inflow (mgd)	2010 Design Flow Total (mgd)	2020 Design Flow Inflow (mgd)	2020 Design Flow Total (mgd)	2030 Design Flow Inflow (mgd)	2030 Design Flow Total (mgd)	2050 Design Flow Inflow (mgd)	2050 Design Flow Total (mgd)	Excess (mgd)	Parallel Pipe (in.)	Decade Exceeded	Surcharge: any negative value in "BW elev" Δ elev FULL pipe	Δ elev	Δ−Δfull	BW elev (ft)	Proposed Diameter (inches)
do not delete this line																												
												10% al-x	0.29	0.29	0.31	0.31	0.33	0.33	0.33	0.33			X					
RE*ALPAC FORCEMAIN	PS 2	238	12	0.013	144.50	165.60	2940					100% pac-a	2.08	2.37	2.61	2.92	2.77	3.10	2.79	3.12			2010					
RE*ALPAC	238	237	21	0.013	165.60	165.30	400	0.0007	1.81	2.8	0.0012	100% pac-x	2.24	4.61	2.70	5.61	2.88	5.97	2.97	6.09	3.29	21	2010					
RE*ALPAC	237	230	21	0.013	165.30	164.90	401	0.0010	2.09	3.2	0.0012	0%		4.61		5.61		5.97		6.09	2.86	21	2010					
RE*ALPAC	230	229	21	0.013	164.90	164.70	135	0.0015	2.54	3.9	0.0012	10% al-x	0.29	4.90	0.31	5.92	0.33	6.30	0.33	6.42	2.47	21	2010					
RE*ALPAC	229	228	21	0.013	164.70	164.40	275	0.0011	2.18	3.4	0.0012	0%		4.90		5.92		6.30		6.42	3.04	21	2010					
RE*ALPAC	228	251	21	0.013	164.40	163.90	241	0.0021	3.01	4.7	0.0012	0%		4.90		5.92		6.30		6.42	1.75	18	2010					
RE*ALPAC	251	252	21	0.013	163.90	163.60	366	0.0008		2.9	0.0012	0%		4.90		5.92		6.30		6.42	3.49	21	2010					
RE*ALPAC	252	253	21	0.013	163.60	163.20	328	0.0012	2.31	3.6	0.0012	0%		4.90		5.92		6.30		6.42	2.84	21	2010					
RE*ALPAC	253	254	21	0.013	163.20	162.90	165	0.0018	2.81	4.4	0.0012	0%		4.90		5.92		6.30		6.42	2.06	18	2010					
RE*ALPAC	254	256	21	0.013	162.90	162.60	300	0.0010	2.09	3.2	0.0012	0%		4.90		5.92		6.30		6.42	3.18	21	2010					
	Section*		21	0.013		3.00	2611	0.0011	**2.24**	**3.5**	**0.0011**	0%		4.90		5.92		6.30		6.42	2.95	21	2010					21
RE*ALPAC	256	257	24	0.013	162.60	162.50	89	0.0011	2.42	4.9	0.0012	40% al-x	1.14	6.04	1.24	7.16	1.31	7.60	1.32	7.74	2.84	21	2010					
RE*ALPAC	257	258	24	0.013	162.50	162.20	251	0.0012	2.50	5.1	0.0012	0%		6.04		7.16		7.60		7.74	2.68	21	2010					
RE*ALPAC	258	259	24	0.013	162.20	161.90	248	0.0012	2.51	5.1	0.0012	0%		6.04		7.16		7.60		7.74	2.65	21	2010					
RE*ALPAC	259	260	24	0.013	161.90	161.70	241	0.0008	2.08	4.2	0.0012	0%		6.04		7.16		7.60		7.74	3.53	21	2010					
RE*ALPAC	260	261	24	0.013	161.70	161.40	241	0.0012	2.55	5.2	0.0012	0%		6.04		7.16		7.60		7.74	2.58	21	2010					
RE*ALPAC	261	290	24	0.013	161.40	161.20	185	0.0011	2.37	4.8	0.0012	0%		6.04		7.16		7.60		7.74	2.93	21	2010					
RE*ALPAC	290	293	24	0.013	161.20	160.80	421	0.0010	2.22	4.5	0.0012	0%		6.04		7.16		7.60		7.74	3.23	21	2010					
RE*ALPAC	293	304	24	0.013	160.80	160.30	438	0.0011	2.44	4.9	0.0012	0%		6.04		7.16		7.60		7.74	2.80	21	2010					
RE*ALPAC	304	305	24	0.013	160.30	159.90	460	0.0009	2.13	4.3	0.0012	0%		6.04		7.16		7.60		7.74	3.42	21	2010					
RE*ALPAC	305	306	24	0.013	159.90	159.40	440	0.0011	2.44	4.9	0.0012	0%		6.04		7.16		7.60		7.74	2.80	21	2010					
RE*ALPAC	306	307	24	0.013	159.40	159.00	446	0.0009	2.16	4.4	0.0012	0%		6.04		7.16		7.60		7.74	3.36	21	2010					
RE*ALPAC	307	308	24	0.013	159.00	158.60	434	0.0009	2.19	4.4	0.0012	0%		6.04		7.16		7.60		7.74	3.30	21	2010					
RE*ALPAC	308	309	24	0.013	158.60	158.10	441	0.0011	2.43	4.9	0.0012	0%		6.04		7.16		7.60		7.74	2.81	21	2010					
RE*ALPAC	309	309B	24	0.013	158.10	157.80	340	0.0009	2.15	4.3	0.0012	0%		6.04		7.16		7.60		7.74	3.39	21	2010					
RE*ALPAC	309B	R83-17	24	0.013	157.80	157.20	345	0.0017	3.01	6.1	0.0012	40% al-x	1.14	7.19	1.24	8.40	1.31	8.91	1.32	9.06	2.95	21	2010					
	Section*		24	0.013		5.40	5020	0.0011	**2.37**	**4.8**	**0.0011**	0%		7.19		8.40		8.91		9.06	4.26	24	2010					24
RE*AUBWVAL	R83-17	R83-16	24	0.013	157.20	156.40	437	0.0018	3.09	6.3	0.0012	0%		7.19		8.40		8.91		9.06	2.79	21	2010					
RE*AUBWVAL	R83-16	R83-15	24	0.013	156.40	156.00	39	0.0103	7.31	14.8	0.0012	0%		7.19		8.40		8.91		9.06	-5.76	OK	NE					
RE*AUBWVAL	R83-15	R83-14	24	0.013	156.00	154.80	367	0.0033	4.13	8.4	0.0012	0%		7.19		8.40		8.91		9.06	0.69	12	2020					
RE*AUBWVAL	R83-14	R83-13	24	0.013	154.80	154.00	369	0.0022	3.36	6.8	0.0012	0%		7.19		8.40		8.91		9.06	2.24	18	2010					
RE*AUBWVAL	R83-13	R83-12	24	0.013	154.00	153.60	408	0.0010	2.26	4.6	0.0012	0%		7.19		8.40		8.91		9.06	4.48	24	2010					
RE*AUBWVAL	R83-12	R83-11	24	0.013	153.60	153.30	371	0.0008	2.05	4.2	0.0012	0%		7.19		8.40		8.91		9.06	4.90	24	2010					
RE*AUBWVAL	R83-11	R83-10	24	0.013	153.30	153.10	339	0.0006	1.75	3.6	0.0012	0%		7.19		8.40		8.91		9.06	5.50	27	2010					
RE*AUBWVAL	R83-10	R83-09	24	0.013	153.10	153.00	270	0.0004	1.39	2.8	0.0012	0%		7.19		8.40		8.91		9.06	6.24	27	2010					
RE*AUBWVAL	R83-09	R83-08	24	0.013	153.00	152.50	221	0.0023	3.43	7.0	0.0012	0%		7.19		8.40		8.91		9.06	2.10	18	2010					
RE*AUBWVAL	R83-08	R83-07	24	0.013	152.50	152.10	467	0.0009	2.11	4.3	0.0012	0%		7.19		8.40		8.91		9.06	4.77	24	2010					
RE*AUBWVAL	R83-07	R83-06	24	0.013	152.10	151.80	380	0.0008	2.03	4.1	0.0012	0%		7.19		8.40		8.91		9.06	4.95	24	2010					
RE*AUBWVAL	R83-06	R83-05	24	0.013	151.80	151.20	538	0.0011	2.41	4.9	0.0012	0%		7.19		8.40		8.91		9.06	4.17	24	2010					
RE*AUBWVAL	R83-05	R83-04	24	0.013	151.20	150.80	475	0.0008	2.09	4.2	0.0012	0%		7.19		8.40		8.91		9.06	4.81	24	2010					
RE*AUBWVAL	R83-04	R83-03	24	0.013	150.80	150.20	480	0.0013	2.55	5.2	0.0012	0%		7.19		8.40		8.91		9.06	3.88	24	2010					
RE*AUBWVAL	R83-03	R83-02	24	0.013	150.20	149.80	482	0.0008	2.08	4.2	0.0012	0%		7.19		8.40		8.91		9.06	4.84	24	2010					
RE*AUBWVAL	R83-02	R83-01	24	0.013	149.80	149.20	235	0.0026	3.65	7.4	0.0012	0%		7.19		8.40		8.91		9.06	1.66	18	2020					
	Section		24	0.013		8.00	5878	0.0014	**2.66**	**5.4**	**0.0014**	0%		7.19		8.40		8.91		9.06	3.66	21	2010					21

Task 250 Report:
AUBURN PLANNING ZONE - PARALLEL ALTERNATIVE
20% I/I reduction effective in 200(

Facility	Up-stream MH #	Down-stream MH #	Dia. (in.)	Manning n	Up-stream Inv Elev	Down-stream Inv Elev	Length (ft)	Slope (ft/ft)	Vfull (fps)	Cap. (mgd)	Herrera Proposed Slope	Modification Origin of Flow Percent	2010 Design Flow Inflow (mgd)	2010 Design Flow Total (mgd)	2020 Design Flow Inflow (mgd)	2020 Design Flow Total (mgd)	2030 Design Flow Inflow (mgd)	2030 Design Flow Total (mgd)	2050 Design Flow Inflow (mgd)	2050 Design Flow Total (mgd)	Excess (mgd)	Parallel Pipe (in.)	Decade Exceeded	Surcharge: any negative value in "BW elev" Δ elev FULL pipe	Δ elev	Δ−Δfull	BW elev (ft)	Proposed Diameter (inches)
												100% fwne-w	1.96	9.15	3.43	11.83	3.63	12.54	3.66	12.72			X					
WVAL	R83-01*	81-2	36	0.013	149.15	148.95	375	0.0005	2.18	10.0	0.0038	25% aub3-s	0.30	9.45	0.36	12.19	0.38	12.93	0.39	13.11	3.15	18	2020					
WVAL	81-2*	81-1	30	0.013	149.00	148.50	210	0.0024	4.09	12.9	0.0038	0%		9.45		12.19		12.93		13.11	0.16	6	2050					
WVAL	81-1*	80-8	42	0.013	148.50	148.42	70	0.0011	3.54	22.0	0.0038	0%		9.45		12.19		12.93		13.11	-8.89	OK	NE					
WVAL Main St*	80-8*	80-7	42	0.013	148.42	147.60	335	0.0024	5.19	32.2	0.0038	0%		9.45		12.19		12.93		13.11	-19.09	OK	NE					
WVAL	80-7*	80-6	30	0.013	147.60	147.00	167	0.0036	5.02	15.9	0.0038	0%		9.45		12.19		12.93		13.11	-2.80	OK	NE					
WVAL	80-6*	80-5	30	0.013	147.00	146.10	482	0.0019	3.62	11.5	0.0038	25% aub3-s	0.30	9.75	0.36	12.55	0.38	13.31	0.39	13.50	2.03	15	2020					
WVAL	80-5*	80-3	30	0.013	146.10	145.16	510	0.0018	3.60	11.4	0.0038	0%		9.75		12.55		13.31		13.50	2.11	15	2020					
WVAL	80-3*	80-2	30	0.013	145.16	144.50	441	0.0015	3.24	10.3	0.0038	0%		9.75		12.55		13.31		13.50	3.23	18	2020					
WVAL	80-2*	80-1	30	0.013	144.50	143.70	450	0.0018	3.53	11.2	0.0038	0%		9.75		12.55		13.31		13.50	2.31	15	2020					
WVAL	80-1*	79-23	30	0.013	143.70	142.80	447	0.0020	3.76	11.9	0.0038	0%		9.75		12.55		13.31		13.50	1.60	15	2020					
WVAL	79-23*	79-22	30	0.013	142.80	142.25	465	0.0012	2.88	9.1	0.0038	0%		9.75		12.55		13.31		13.50	4.38	21	2010					
WVAL	79-22*	79-21	30	0.013	142.25	141.95	450	0.0007	2.16	6.8	0.0038	0%		9.75		12.55		13.31		13.50	6.65	24	2010					
WVAL	79-21*	79-20	30	0.013	141.95	141.70	410	0.0006	2.07	6.6	0.0038	0%		9.75		12.55		13.31		13.50	6.94	24	2010					
WVAL	79-20*	79-19	30	0.013	141.70	141.48	363	0.0006	2.06	6.5	0.0038	0%		9.75		12.55		13.31		13.50	6.97	24	2010					
WVAL	79-19*	79-18	30	0.013	141.48	141.26	362	0.0006	2.07	6.5	0.0038	0%		9.75		12.55		13.31		13.50	6.95	24	2010					
WVAL	79-18*	79-17	30	0.013	141.26	141.00	425	0.0006	2.07	6.6	0.0038	0%		9.75		12.55		13.31		13.50	6.94	24	2010					
WVAL	79-17*	79-16	42	0.013	140.89	139.87	260	0.0039	6.57	40.8	0.0038	0%		9.75		12.55		13.31		13.50	-27.27	OK	NE					
WVAL	79-16*	79-15X	30	0.013	139.87	139.67	360	0.0006	1.97	6.3	0.0038	0%		9.75		12.55		13.31		13.50	7.25	24	2010					
WVAL	79-15X*	79-15	30	0.013	139.67	139.04	90	0.0070	7.01	22.2	0.0038	0%		9.75		12.55		13.31		13.50	-8.70	OK	NE					
WVAL	79-15*	79-14	30	0.013	139.04	138.15	410	0.0022	3.90	12.4	0.0038	0%		9.75		12.55		13.31		13.50	1.14	12	2020					
WVAL	79-14*	1	30	0.013	138.15	137.92	389	0.0006	2.04	6.5	0.0038	0%		9.75		12.55		13.31		13.50	7.04	24	2010					
	Section*		24	0.013		11.23	7470	0.0015	**2.80**	**5.7**	**0.0015**	0%		9.75		12.55		13.31		13.50	7.82	30	2010					30
WVAL	1*	79-13	42	0.013	137.92	136.50	380	0.0037	6.41	39.8	0.0038	0%		9.75		12.55		13.31		13.50	-26.29	OK	NE					
WVAL	79-13*	79-12	30	0.013	136.50	136.40	100	0.0010	2.65	8.4	0.0038	0%		9.75		12.55		13.31		13.50	5.09	21	2010					
											0.0038	100% fwne-x	1.40	11.14	1.73	14.28	1.83	15.14	1.85	15.34			X					
WVAL	79-12*	79-11	30	0.013	136.40	135.95	484	0.0009	2.55	8.1	0.0038	25% aub3-s	0.30	11.44	0.36	14.64	0.38	15.52	0.39	15.74	7.65	24	2010					
WVAL	79-11*	79-10	30	0.013	135.95	135.70	289	0.0009	2.46	7.8	0.0038	0%		11.44		14.64		15.52		15.74	7.94	24	2010					
WVAL	79-10*	79-9	30	0.013	135.70	135.41	364	0.0008	2.37	7.5	0.0038	0%		11.44		14.64		15.52		15.74	8.25	24	2010					
WVAL	79-9*	79-8	30	0.013	135.41	135.12	361	0.0008	2.38	7.5	0.0038	0%		11.44		14.64		15.52		15.74	8.21	24	2010					
WVAL	79-8*	79-6	30	0.013	135.12	134.83	362	0.0008	2.37	7.5	0.0038	0%		11.44		14.64		15.52		15.74	8.23	24	2010					
WVAL	79-6*	79-5	30	0.013	134.83	134.50	411	0.0008	2.37	7.5	0.0038	0%		11.44		14.64		15.52		15.74	8.22	24	2010					
WVAL	79-5*	79-4	30	0.013	134.50	134.09	496	0.0008	2.41	7.6	0.0038	0%		11.44		14.64		15.52		15.74	8.11	24	2010					
WVAL	3*	79-3	30	0.013	134.09	133.70	490	0.0008	2.36	7.5	0.0038	0%		11.44		14.64		15.52		15.74	8.25	24	2010					
WVAL	79-3*	79-2	30	0.013	133.70	133.42	373	0.0008	2.30	7.3	0.0038	25% aub3-s	0.30	11.74	0.36	15.00	0.38	15.91	0.39	16.13	8.86	24	2010					
WVAL	79-2*	79-1	30	0.013	133.42	133.40	39	0.0005	1.91	6.0	0.0038	0%		11.74		15.00		15.91		16.13	10.08	27	2010					
WVAL	79-1*	R18H-65	42	0.013	133.40	133.19	12	0.0175	13.87	86.1	0.0038	0%		11.74		15.00		15.91		16.13	-69.97	OK	NE					
	Section*		30	0.013		4.73	4160	0.0011	**2.83**	**8.9**	**0.0011**	0%		11.74		15.00		15.91		16.13	7.18	30	2010					30
TO AUBURN3.R18H-65																												

Task 250 Report:
AUBURN PLANNING ZONE - PARALLEL ALTERNATIVE
20% I/I reduction effective in 200(

Facility	Up-stream MH #	Down-stream MH #	Dia. (in.)	Manning n	Up-stream Inv Elev	Down-stream Inv Elev	Length (ft)	Slope (ft/ft)	Vfull (fps)	Cap. (mgd)	Herrera Proposed Slope	Modification Origin of Flow Percent	2010 Design Flow Inflow (mgd)	2010 Design Flow Total (mgd)	2020 Design Flow Inflow (mgd)	2020 Design Flow Total (mgd)	2030 Design Flow Inflow (mgd)	2030 Design Flow Total (mgd)	2050 Design Flow Inflow (mgd)	2050 Design Flow Total (mgd)	Excess (mgd)	Parallel Pipe (in.)	Decade Exceeded	Surcharge: any negative value in "BW elev" Δ elev FULL pipe	Δ elev	Δ−Δfull	BW elev (ft)	Proposed Diameter (inches)
WEST INTERCEPTOR												100% lh-pc	1.41	1.41	2.50	2.50	2.67	2.67	2.72	2.72			X					
L. HILLS*			24	0.013	194.74	174.98	7269	0.0017	3.01	6.1	0.0027	100% wr-x	3.12	4.52	5.16	7.66	5.48	8.15	5.54	8.26	2.16	15	2020					
REPLACEMENT REQUIRED			27	0.013		19.76	7269	0.0027	**4.07**	**10.4**	**0.0027**	0%		4.52		7.66		8.15		8.26			X					27
RE*WINTSEWR	GR27-44	GR27-43	24	0.013	174.98	172.67	329	0.0070	6.05	12.3	0.0030	40% wi-x	3.52	8.04	3.91	11.57	4.12	12.27	4.12	12.38	0.11	6	2030					
RE*WINTSEWR	GR27-43	GR27-42	24	0.013	172.67	170.67	295	0.0068	5.94	12.0	0.0030	0%		8.04		11.57		12.27		12.38	0.33	9	2030					
RE*WINTSEWR	GR27-42	GR27-41	24	0.013	170.67	168.78	268	0.0071	6.06	12.3	0.0030	0%		8.04		11.57		12.27		12.38	0.09	6	2050					
RE*WINTSEWR	GR27-41	GR27-40	24	0.013	168.78	168.52	123	0.0021	3.32	6.7	0.0030	0%		8.04		11.57		12.27		12.38	5.65	21	2010					
RE*WINTSEWR	GR27-40	GR27-39	24	0.013	168.52	167.20	412	0.0032	4.09	8.3	0.0030	0%		8.04		11.57		12.27		12.38	4.10	21	2020					
RE*WINTSEWR	GR27-39	GR27-38	24	0.013	167.20	166.40	399	0.0020	3.23	6.6	0.0030	0%		8.04		11.57		12.27		12.38	5.82	24	2010					
RE*WINTSEWR	GR27-38	GR27-37	24	0.013	166.40	165.60	410	0.0020	3.19	6.5	0.0030	0%		8.04		11.57		12.27		12.38	5.91	24	2010					
RE*WINTSEWR	GR27-37	GR27-36	24	0.013	165.60	164.80	411	0.0019	3.19	6.5	0.0030	0%		8.04		11.57		12.27		12.38	5.92	24	2010					
RE*WINTSEWR	GR27-36	GR27-35	24	0.013	164.80	163.90	410	0.0022	3.38	6.9	0.0030	0%		8.04		11.57		12.27		12.38	5.52	21	2010					
RE*WINTSEWR	GR27-35	GR27-34	24	0.013	163.90	163.10	419	0.0019	3.15	6.4	0.0030	0%		8.04		11.57		12.27		12.38	5.99	24	2010					
RE*WINTSEWR	GR27-34	GR27-33	24	0.013	163.10	162.50	414	0.0014	2.75	5.6	0.0030	0%		8.04		11.57		12.27		12.38	6.81	24	2010					
RE*WINTSEWR	GR27-33	GR27-32A	24	0.013	162.50	162.40	117	0.0009	2.11	4.3	0.0030	0%		8.04		11.57		12.27		12.38	8.10	27	2010					
RE*WINTSEWR	GR27-32A	GR27-32	24	0.013	162.40	162.10	160	0.0019	3.13	6.3	0.0030	0%		8.04		11.57		12.27		12.38	6.04	24	2010					
RE*WINTSEWR	GR27-32	GR27-31	24	0.013	162.10	162.00	111	0.0009	2.17	4.4	0.0030	0%		8.04		11.57		12.27		12.38	7.99	24	2010					
CORRODED	REPLACE UPSTREAM		24	0.013		12.98	4278	0.0030	**3.98**	**8.1**	**0.0030**	0%		8.04		11.57		12.27		12.38	4.32	21	2020					21
RE*WINTSEWR	GR27-31	GR27-30	24	0.013	162.00	161.50	239	0.0021	3.30	6.7	0.0021	0%		8.04		11.57		12.27		12.38	5.68	24	2010					
RE*WINTSEWR	GR27-30	GR27-29	24	0.013	161.50	161.40	64	0.0016	2.86	5.8	0.0021	0%		8.04		11.57		12.27		12.38	6.59	24	2010					
RE*WINTSEWR	GR27-29	GR27-28	24	0.013	161.40	160.80	409	0.0015	2.77	5.6	0.0021	0%		8.04		11.57		12.27		12.38	6.77	24	2010					
RE*WINTSEWR	GR27-28	GR27-27	24	0.013	160.80	160.20	410	0.0015	2.76	5.6	0.0021	0%		8.04		11.57		12.27		12.38	6.78	24	2010					
RE*WINTSEWR	GR27-27	GR27-26	24	0.013	160.20	159.60	398	0.0015	2.80	5.7	0.0021	0%		8.04		11.57		12.27		12.38	6.70	24	2010					
RE*WINTSEWR	GR27-26	GR27-25	24	0.013	159.60	158.20	248	0.0056	5.42	11.0	0.0021	0%		8.04		11.57		12.27		12.38	1.39	15	2020					
	Section*		24	0.013		3.80	1768	0.0021	**3.35**	**6.8**	**0.0021**	0%		8.04		11.57		12.27		12.38	5.59	24	2010					24
RE*WINTSEWR	GR27-25	GR27-24	36	0.013	158.20	157.60	433	0.0014	3.52	16.1	0.0013	0%		8.04		11.57		12.27		12.38	-3.69	OK	NE					
RE*WINTSEWR	GR27-24	GR27-23	36	0.013	157.60	157.00	445	0.0013	3.47	15.8	0.0013	0%		8.04		11.57		12.27		12.38	-3.47	OK	NE					
RE*WINTSEWR	GR27-23	GR27-22	36	0.013	157.00	156.50	445	0.0011	3.17	14.5	0.0013	0%		8.04		11.57		12.27		12.38	-2.09	OK	NE					
RE*WINTSEWR	GR27-22	GR27-21	36	0.013	156.50	155.90	443	0.0014	3.48	15.9	0.0013	0%		8.04		11.57		12.27		12.38	-3.50	OK	NE					
RE*WINTSEWR	GR27-21	GR27-20	36	0.013	155.90	155.50	310	0.0013	3.40	15.5	0.0013	0%		8.04		11.57		12.27		12.38	-3.12	OK	NE	0.25	0.40	0.15	-0.06	
RE*WINTSEWR	GR27-20	GR27-19	36	0.013	155.50	154.90	421	0.0014	3.57	16.3	0.0013	55% wi-x	4.84	12.88	5.38	16.95	5.67	17.94	5.66	18.04	1.75	18	2020	0.73	0.60	-0.13	-0.21	
RE*WINTSEWR	GR27-19	GR27-18	36	0.013	154.90	154.20	444	0.0016	3.76	17.1	0.0013	0%		12.88		16.95		17.94		18.04	0.91	15	2030	0.77	0.70	-0.07	-0.07	IGNORE
RE*WINTSEWR	GR27-18	GR27-17	36	0.013	154.20	153.10	498	0.0022	4.45	20.3	0.0013	0%		12.88		16.95		17.94		18.04	-2.23	OK	NE					
RE*WINTSEWR*	GR27-17	GR27-16	36	0.013	153.10	153.00	490	0.0002	1.35	6.2	0.0013	0%		12.88		16.95		17.94		18.04	11.88	33	2010	0.85	0.10	-0.75	-1.27	33
RE*WINTSEWR	GR27-16	GR27-15	36	0.013	153.00	152.40	499	0.0012	3.28	15.0	0.0013	0%		12.88		16.95		17.94		18.04	3.08	21	2020	0.87	0.60	-0.27	-0.52	21
RE*WINTSEWR	GR27-15	GR27-14	36	0.013	152.40	151.80	488	0.0012	3.32	15.1	0.0013	0%		12.88		16.95		17.94		18.04	2.91	21	2020	0.85	0.60	-0.25	-0.25	21
	Section		36	0.013		6.40	4916	0.0013	**3.41**	**15.6**	**0.0013**	0%		12.88		16.95		17.94		18.04	2.48	21	2020					ok
RE*WINTSEWR	GR27-14	GR27-13	42	0.013	151.80	151.20	543	0.0011	3.49	21.6	0.0011	0%		12.88		16.95		17.94		18.04	-3.59	OK	NE					
RE*WINTSEWR	GR27-13	GR27-12B	42	0.013	151.20	150.90	110	0.0027	5.48	34.0	0.0011	0%		12.88		16.95		17.94		18.04	-15.94	OK	NE					
RE*WINTSEWR	GR27-12B	GR27-12	42	0.013	150.90	150.80	250	0.0004	2.10	13.0	0.0011	0%		12.88		16.95		17.94		18.04	5.02	27	2020					
RE*WINTSEWR	GR27-12	GR27-11	42	0.013	150.80	150.40	309	0.0013	3.77	23.4	0.0011	0%		12.88		16.95		17.94		18.04	-5.38	OK	NE					
RE*WINTSEWR	GR27-11	GR27-10	42	0.013	150.40	150.00	428	0.0009	3.21	19.9	0.0011	0%		12.88		16.95		17.94		18.04	-1.85	OK	NE					
RE*WINTSEWR	GR27-10	GR27-09	42	0.013	150.00	149.80	206	0.0010	3.27	20.3	0.0011	0%		12.88		16.95		17.94		18.04	-2.23	OK	NE					
	Section*		42	0.013		2.00	1846	0.0011	**3.45**	**21.4**	**0.0011**	0%		12.88		16.95		17.94		18.04	-3.38	OK	NE					OK
RE*WINTSEWR	GR27-09	GR27-08	42	0.013	149.80	149.10	503	0.0014	3.91	24.3	0.0014	0%		12.88		16.95		17.94		18.04	-6.23	OK	NE					
RE*WINTSEWR	GR27-08	GR27-07	42	0.013	149.10	148.50	499	0.0012	3.64	22.6	0.0014	0%		12.88		16.95		17.94		18.04	-4.52	OK	NE					
RE*WINTSEWR	GR27-07	GR27-06	42	0.013	148.50	147.80	479	0.0015	4.01	24.9	0.0014	0%		12.88		16.95		17.94		18.04	-6.83	OK	NE					
RE*WINTSEWR	GR27-06	GR27-05	42	0.013	147.80	147.30	426	0.0012	3.59	22.3	0.0014	0%		12.88		16.95		17.94		18.04	-4.25	OK	NE					
RE*WINTSEWR	GR27-05	GR27-04	42	0.013	147.30	146.80	398	0.0013	3.72	23.1	0.0014	0%		12.88		16.95		17.94		18.04	-5.03	OK	NE					
RE*WINTSEWR	GR27-04	GR27-03	42	0.013	146.80	146.60	121	0.0017	4.26	26.5	0.0014	0%		12.88		16.95		17.94		18.04	-8.41	OK	NE					
RE*WINTSEWR	GR27-03	GR27-02	42	0.013	146.60	145.70	636	0.0014	3.94	24.5	0.0014	0%		12.88		16.95		17.94		18.04	-6.44	OK	NE					
RE*WINTSEWR	GR27-02	GR27-01	42	0.013	145.70	144.80	628	0.0014	3.97	24.6	0.0014	5% wi-x	0.44	13.32	0.49	17.44	0.52	18.46	0.51	18.56	-6.08	OK	NE					
RE*WINTSEWR	GR27-01	R18H-78A	42	0.013	144.80	144.50	65	0.0046	7.12	44.2	0.0014	0%		13.32		17.44		18.46		18.56	-25.65	OK	NE					
	Section*		42	0.013		5.30	3755	0.0014	**3.94**	**24.5**	**0.0014**	0%		13.32		17.44		18.46		18.56	-5.89	OK	NE					OK
TO AUBURN3.R18H-78A																												

Task 250 Report:
AUBURN PLANNING ZONE - PARALLEL ALTERNATIVE
20% I/I reduction effective in 200(

Facility	Up-stream MH #	Down-stream MH #	Dia. (in.)	Manning n	Up-stream Inv Elev	Down-stream Inv Elev	Length (ft)	Slope (ft/ft)	Vfull (fps)	Cap. (mgd)	Herrera Proposed Slope	Modification Origin of Flow Percent	2010 Design Flow Inflow (mgd)	2010 Design Flow Total (mgd)	2020 Design Flow Inflow (mgd)	2020 Design Flow Total (mgd)	2030 Design Flow Inflow (mgd)	2030 Design Flow Total (mgd)	2050 Design Flow Inflow (mgd)	2050 Design Flow Total (mgd)	Excess (mgd)	Parallel Pipe (in.)	Decade Exceeded	Surcharge: any negative value in "BW elev" Δ elev FULL pipe	Δ elev	Δ−Δfull	BW elev (ft)	Proposed Diameter (inches)
M STREET TRUNK												100% seg-x	1.02	1.02	1.56	1.56	1.65	1.65	1.66	1.66			X					
RE*MSTTRUNK	GR19-49	GR19-48	18	0.013	200.10	199.10	422	0.0024	2.90	3.3	0.0023	70% mst-s	5.42	6.44	6.23	7.78	6.65	8.30	6.91	8.57	5.26	24	2010					
RE*MSTTRUNK	GR19-48	GR19-47	18	0.013	199.10	198.30	385	0.0021	2.72	3.1	0.0023	0%		6.44		7.78		8.30		8.57	5.47	24	2010					
RE*MSTTRUNK	GR19-47	GR19-46	18	0.013	198.30	198.05	102	0.0025	2.95	3.4	0.0023	0%		6.44		7.78		8.30		8.57	5.21	24	2010					
RE*MSTTRUNK	GR19-46*	GR19-45	18	0.013	198.05	197.10	414	0.0023	2.86	3.3	0.0023	0%		6.44		7.78		8.30		8.57	5.31	24	2010					
RE*MSTTRUNK	GR19-45	GR19-44	18	0.013	197.10	196.40	322	0.0022	2.78	3.2	0.0023	0%		6.44		7.78		8.30		8.57	5.40	24	2010					
RE*MSTTRUNK	GR19-44	GR20-43	18	0.013	196.40	195.60	330	0.0024	2.94	3.3	0.0023	7% mst-s	0.54	6.98	0.62	8.41	0.66	8.96	0.69	9.26	5.91	24	2010					
	Section		18	0.013		4.50	1975	0.0023	**2.85**	**3.2**	**0.0023**	0%		6.98		8.41		8.96		9.26	6.01	24	2010					24
RE*MSTTRUNK	GR20-43	GR20-42	18	0.013	195.60	194.00	308	0.0052	4.30	4.9	0.0056	0%		6.98		8.41		8.96		9.26	4.36	18	2010					
RE*MSTTRUNK	GR20-42	GR20-41	18	0.013	194.00	192.40	320	0.0050	4.22	4.8	0.0056	0%		6.98		8.41		8.96		9.26	4.45	18	2010					
RE*MSTTRUNK	GR20-41	GR20-40	18	0.013	192.40	190.80	321	0.0050	4.21	4.8	0.0056	0%		6.98		8.41		8.96		9.26	4.46	18	2010					
RE*MSTTRUNK	GR20-40	GR21-39	18	0.013	190.80	188.90	362	0.0052	4.32	4.9	0.0056	0%		6.98		8.41		8.96		9.26	4.33	18	2010					
RE*MSTTRUNK	GR21-39	GR21-38	18	0.013	188.90	187.30	329	0.0049	4.16	4.7	0.0056	0%		6.98		8.41		8.96		9.26	4.52	18	2010					
RE*MSTTRUNK	GR21-38	GR21-37	18	0.013	187.30	185.60	340	0.0050	4.22	4.8	0.0056	8% mst-s	0.62	7.60	0.71	9.12	0.76	9.72	0.79	10.05	5.24	21	2010					
RE*MSTTRUNK	GR21-37	GR21-36A	18	0.013	185.60	185.20	77	0.0052	4.30	4.9	0.0056	0%		7.60		9.12		9.72		10.05	5.15	21	2010					
RE*MSTTRUNK	GR21-36A	GR21-36	18	0.013	185.20	183.90	252	0.0052	4.28	4.9	0.0056	0%		7.60		9.12		9.72		10.05	5.17	21	2010					
RE*MSTTRUNK	GR21-36	GR21-35	18	0.013	183.90	180.20	285	0.0130	6.79	7.7	0.0056	0%		7.60		9.12		9.72		10.05	2.31	15	2020					
RE*MSTTRUNK	GR21-35	GR21-34	18	0.013	180.20	178.40	342	0.0053	4.32	4.9	0.0056	0%		7.60		9.12		9.72		10.05	5.12	21	2010					
RE*MSTTRUNK	GR21-34	GR21-33	18	0.013	178.40	176.20	428	0.0051	4.27	4.9	0.0056	0%		7.60		9.12		9.72		10.05	5.18	21	2010					
RE*MSTTRUNK	GR21-33	GR21-32	18	0.013	176.20	174.10	430	0.0049	4.16	4.7	0.0056	0%		7.60		9.12		9.72		10.05	5.30	21	2010					
RE*MSTTRUNK	GR21-32	GR21-31	18	0.013	174.10	172.10	383	0.0052	4.31	4.9	0.0056	15% mst-s	1.16	8.76	1.33	10.45	1.42	11.14	1.48	11.53	6.62	21	2010					
RE*MSTTRUNK	GR21-31	GR22-30	18	0.013	172.10	170.20	382	0.0050	4.20	4.8	0.0056	0%		8.76		10.45		11.14		11.53	6.73	21	2010					
	Section*		18	0.013		25.40	4559	0.0056	**4.45**	**5.1**	**0.0056**	0%		8.76		10.45		11.14		11.53	6.46	21	2010					21
RE*MSTTRUNK	GR22-30*	GR22-29	24	0.013	163.70	163.40	177	0.0017	2.97	6.0	0.0018	0%		8.76		10.45		11.14		11.53	5.50	24	2010					
RE*MSTTRUNK	GR22-29*	GR22-28	24	0.013	163.40	163.10	165	0.0018	3.08	6.2	0.0018	0%		8.76		10.45		11.14		11.53	5.29	24	2010					
RE*MSTTRUNK	GR22-28*	GR22-27	24	0.013	163.10	162.80	167	0.0018	3.06	6.2	0.0018	0%		8.76		10.45		11.14		11.53	5.33	24	2010					
RE*MSTTRUNK	GR22-27*	GR22-26	24	0.013	162.80	162.50	160	0.0019	3.13	6.3	0.0018	0%		8.76		10.45		11.14		11.53	5.19	24	2010					
RE*MSTTRUNK	GR22-26*	GR22-25	24	0.013	162.50	162.30	153	0.0013	2.61	5.3	0.0018	0%		8.76		10.45		11.14		11.53	6.24	27	2010					
RE*MSTTRUNK	GR22-25*	GR22-24	24	0.013	162.30	162.00	128	0.0023	3.50	7.1	0.0018	0%		8.76		10.45		11.14		11.53	4.44	24	2010					
	Section*		24	0.013		1.70	950	0.0018	**3.06**	**6.2**	**0.0018**	0%		8.76		10.45		11.14		11.53	5.33	24	2010					24
RE*MSTTRUNK	GR22-24*	GR22-23	30	0.013	162.00	161.70	659	0.0005	1.79	5.7	0.0020	0%		8.76		10.45		11.14		11.53	5.86	24	2010					
RE*MSTTRUNK	GR22-23*	GR22-22B	30	0.013	161.70	161.30	605	0.0007	2.16	6.8	0.0020	0%		8.76		10.45		11.14		11.53	4.70	24	2010					
RE*MSTTRUNK	GR22-22B*	GR22-22A	30	0.013	161.30	161.10	302	0.0007	2.16	6.8	0.0020	0%		8.76		10.45		11.14		11.53	4.70	24	2010					
RE*MSTTRUNK	GR22-22A*	GR22-22	30	0.013	161.11	160.42	203	0.0034	4.87	15.4	0.0020	0%		8.76		10.45		11.14		11.53	-3.91	OK	NE					
RE*MSTTRUNK	GR22-22*	GR22-21A	30	0.013	160.42	159.79	188	0.0034	4.87	15.4	0.0020	0%		8.76		10.45		11.14		11.53	-3.91	OK	NE					
RE*MSTTRUNK	GR22-21A*	GR22-21	30	0.013	159.79	159.64	20	0.0073	7.18	22.7	0.0020	100% mst-e	2.67	11.43	3.26	13.72	3.47	14.61	3.54	15.07	-7.66	OK	NE					
RE*MSTTRUNK	GR22-21*	GR22-20	30	0.013	159.60	158.90	357	0.0020	3.71	11.7	0.0020	0%		11.43		13.72		14.61		15.07	3.32	21	2020					
RE*MSTTRUNK	GR22-20*	GR22-19	30	0.013	158.80	158.00	400	0.0020	3.75	11.9	0.0020	0%		11.43		13.72		14.61		15.07	3.21	21	2020					
RE*MSTTRUNK	GR22-19*	GR22-18	30	0.013	157.90	156.90	487	0.0021	3.80	12.0	0.0020	0%		11.43		13.72		14.61		15.07	3.05	18	2020					
RE*MSTTRUNK	GR22-18	GR22-17A	30	0.013	156.90	156.10	336	0.0024	4.09	12.9	0.0020	80% mst-n	1.21	12.64	1.37	15.09	1.47	16.09	1.57	16.64	3.69	21	2020					
RE*MSTTRUNK	GR22-17A	GR22-17	30	0.013	156.10	155.60	240	0.0021	3.82	12.1	0.0020	0%		12.64		15.09		16.09		16.64	4.53	21	2010					
RE*MSTTRUNK	GR22-17	GR22-16	30	0.013	155.60	155.40	59	0.0034	4.88	15.5	0.0020	0%		12.64		15.09		16.09		16.64	1.19	15	2030					
RE*MSTTRUNK	GR22-16	GR22-15	30	0.013	155.40	153.90	729	0.0021	3.80	12.0	0.0020	0%		12.64		15.09		16.09		16.64	4.60	24	2010					
RE*MSTTRUNK	GR22-15	GR22-14	30	0.013	153.90	153.80	13	0.0077	7.35	23.3	0.0020	0%		12.64		15.09		16.09		16.64	-6.63	OK	NE					
RE*MSTTRUNK	GR22-14	GR22-13A	30	0.013	153.80	152.50	687	0.0019	3.64	11.5	0.0020	0%		12.64		15.09		16.09		16.64	5.10	24	2010					
RE*MSTTRUNK	GR22-13A	GR22-13	30	0.013	152.50	151.80	236	0.0030	4.56	14.5	0.0020	0%		12.64		15.09		16.09		16.64	2.19	18	2020					
RE*MSTTRUNK	GR22-13	GR22-12A	30	0.013	151.80	151.50	134	0.0022	3.96	12.6	0.0020	0%		12.64		15.09		16.09		16.64	4.09	21	2010					
RE*MSTTRUNK	GR22-12A	GR22-12	30	0.013	151.50	150.30	518	0.0023	4.03	12.8	0.0020	0%		12.64		15.09		16.09		16.64	3.87	21	2020					
RE*MSTTRUNK	GR22-12	GR22-11	30	0.013	150.30	148.30	652	0.0031	4.64	14.7	0.0020	0%		12.64		15.09		16.09		16.64	1.95	18	2020					
	Section*		30	0.013		13.70	6825	0.0020	**3.75**	**11.9**	**0.0020**	0%		12.64		15.09		16.09		16.64	4.75	24	2010					24
RE*MSTTRUNK	GR22-11	GR22-10	36	0.013	148.30	147.90	704	0.0006	2.26	10.3	0.0008	0%		12.64		15.09		16.09		16.64	6.36	30	2010					
												100% sss-sw	0.80	13.44	1.12	16.20	1.19	17.28	1.22	17.87			X					
												100% mst-ne	0.92	14.36	1.41	17.61	1.51	18.79	1.57	19.43			X					
RE*MSTTRUNK	GR22-10	GR22-08A	36	0.013	147.90	147.00	1079	0.0008	2.73	12.5	0.0008	20% mst-n	0.30	14.66	0.34	17.95	0.37	19.16	0.39	19.82	7.37	30	2010					
RE*MSTTRUNK	GR22-08A	GR22-07	36	0.013	147.00	146.60	528	0.0008	2.60	11.9	0.0008	0%		14.66		17.95		19.16		19.82	7.95	33	2010					
RE*MSTTRUNK	GR22-07	GR22-06	36	0.013	146.60	146.40	237	0.0008	2.75	12.5	0.0008	0%		14.66		17.95		19.16		19.82	7.29	30	2010					
RE*MSTTRUNK	GR22-06	GR22-05	36	0.013	146.40	146.30	13	0.0077	8.30	37.8	0.0008	0%		14.66		17.95		19.16		19.82	-18.02	OK	NE					
RE*MSTTRUNK	GR22-05	GR22-04	36	0.013	146.30	146.10	269	0.0007	2.58	11.8	0.0008	0%		14.66		17.95		19.16		19.82	8.06	33	2010					
RE*MSTTRUNK	GR22-04	GR22-02A	36	0.013	146.10	145.60	655	0.0008	2.61	11.9	0.0008	0%		14.66		17.95		19.16		19.82	7.90	33	2010					
RE*MSTTRUNK	GR22-02A	GR22-02	36	0.013	145.60	145.30	348	0.0009	2.78	12.7	0.0008	0%		14.66		17.95		19.16		19.82	7.15	30	2010					
RE*MSTTRUNK	GR22-02*	R18H-78A	36	0.013	145.20	144.80	464	0.0009	2.78	12.7	0.0008	0%		14.66		17.95		19.16		19.82	7.15	30	2010					
	Section*		36	0.013		3.50	4297	0.0008	**2.70**	**12.3**	**0.0008**	0%		14.66		17.95		19.16		19.82	7.51	30	2010					30
TO AUBURN3.R18H-78A																												

Task 250 Report:
AUBURN PLANNING ZONE - PARALLEL ALTERNATIVE
20% I/I reduction effective in 200(

Facility	Up-stream MH #	Down-stream MH #	Dia. (in.)	Manning n	Up-stream Inv Elev	Down-stream Inv Elev	Length (ft)	Slope (ft/ft)	Vfull (fps)	Cap. (mgd)	Herrera Proposed Slope	Modification Origin of Flow Percent	2010 Design Flow Inflow (mgd)	2010 Design Flow Total (mgd)	2020 Design Flow Inflow (mgd)	2020 Design Flow Total (mgd)	2030 Design Flow Inflow (mgd)	2030 Design Flow Total (mgd)	2050 Design Flow Inflow (mgd)	2050 Design Flow Total (mgd)	Excess (mgd)	Parallel Pipe (in.)	Decade Exceeded	Surcharge: any negative value in "BW elev" Δ elev FULL pipe	Δ elev	Δ−Δfull	BW elev (ft)	Proposed Diameter (inches)
do not delete row																												
												100% MSTTRK GR22-02	14.66	14.66	17.95	17.95	19.16	19.16	19.82	19.82			X					
AUBURN 3 TRUNK												100% WINTSEWR.GR27-01	13.32	27.98	17.44	35.39	18.46	37.62	18.56	38.38			X					
RE*AUBURN3	R18H-78A	R18H-78	42	0.013	144.50	143.70	123	0.0065	8.46	52.5	0.0021	0%		27.98		35.39		37.62		38.38	-14.11	OK	NE					
RE*AUBURN3	R18H-78	R18H-77	42	0.013	143.70	140.90	480	0.0058	8.01	49.7	0.0021	0%		27.98		35.39		37.62		38.38	-11.33	OK	NE					
RE*AUBURN3	R18H-77	R18H-76	42	0.013	140.90	138.10	480	0.0058	8.01	49.7	0.0021	0%		27.98		35.39		37.62		38.38	-11.33	OK	NE					
RE*AUBURN3	R18H-76	R18H-75	42	0.013	138.10	135.30	480	0.0058	8.01	49.7	0.0021	0%		27.98		35.39		37.62		38.38	-11.33	OK	NE					
RE*AUBURN3	R18H-75	R18H-74	42	0.013	135.30	132.60	480	0.0056	7.86	48.8	0.0021	0%		27.98		35.39		37.62		38.38	-10.43	OK	NE					
	Section		42	0.013		11.90	2043	0.0058	**8.00**	**49.7**	**0.0058**	0%		27.98		35.39		37.62		38.38	-11.29	OK	NE					OK
RE*AUBURN3	R18H-74	R18H-73	72	0.013	131.40	131.00	162	0.0025	7.46	136.1	0.0021	100% aub3-c	2.48	30.47	3.28	38.67	3.50	41.12	3.62	42.01	-94.13	OK	NE	0.04	0.40	0.36	0.15	
RE*AUBURN3	R18H-73	R18H-72	72	0.013	131.00	131.10	499	-0.0002			0.0021	0%		30.47		38.67		41.12		42.01	42.01	48	2010	0.12	-0.10	-0.22	-0.22	IGNORE
RE*AUBURN3	R18H-72	R18H-71	72	0.013	131.10	130.80	500	0.0006	3.68	67.1	0.0021	0%		30.47		38.67		41.12		42.01	-25.10	OK	NE					
RE*AUBURN3	R18H-71	R18H-70	72	0.013	130.80	130.60	365	0.0005	3.52	64.1	0.0021	0%		30.47		38.67		41.12		42.01	-22.12	OK	NE					
RE*AUBURN3	R18H-70	R18H-69	72	0.013	130.60	130.50	363	0.0003	2.49	45.5	0.0021	0%		30.47		38.67		41.12		42.01	-3.46	OK	NE					
RE*AUBURN3	R18H-69	R18H-68	72	0.013	130.50	130.30	84	0.0024	7.33	133.7	0.0021	0%		30.47		38.67		41.12		42.01	-91.68	OK	NE					
RE*AUBURN3	R18H-68	R18H-67	72	0.013	130.30	130.10	421	0.0005	3.27	59.7	0.0021	0%		30.47		38.67		41.12		42.01	-17.71	OK	NE					
RE*AUBURN3	R18H-67	R18H-66	72	0.013	130.10	129.80	489	0.0006	3.72	67.9	0.0021	0%		30.47		38.67		41.12		42.01	-25.85	OK	NE					
RE*AUBURN3	R18H-66	R18H-65	72	0.013	129.80	129.20	489	0.0012	5.26	96.0	0.0021	0%		30.47		38.67		41.12		42.01	-53.96	OK	NE					
												100% WVAL 79-1	11.74	42.21	15.00	53.67	15.91	57.03	16.13	58.13			X					
RE*AUBURN3	R18H-65	R18H-64	72	0.013	129.20	128.90	610	0.0005	3.33	60.8	0.0021	0%		42.21		53.67		57.03		58.13	-2.62	OK	NE					
RE*AUBURN3	R18H-64	R18H-63	72	0.013	128.90	128.60	612	0.0005	3.33	60.7	0.0021	0%		42.21		53.67		57.03		58.13	-2.52	OK	NE					
RE*AUBURN3	R18H-63	R18H-62	72	0.013	128.60	128.50	87	0.0011	5.09	92.9	0.0021	0%		42.21		53.67		57.03		58.13	-34.75	OK	NE					
RE*AUBURN3	R18H-62	R18H-61	72	0.013	128.50	128.30	275	0.0007	4.05	73.9	0.0021	0%		42.21		53.67		57.03		58.13	-15.75	OK	NE					
RE*AUBURN3	R18H-61	R18H-59	72	0.013	128.30	127.90	556	0.0007	4.03	73.5	0.0021	0%		42.21		53.67		57.03		58.13	-15.35	OK	NE					
RE*AUBURN3	R18H-59	R18H-58	72	0.013	127.90	127.50	460	0.0009	4.43	80.8	0.0021	0%		42.21		53.67		57.03		58.13	-22.65	OK	NE					
	Section*		72	0.013		3.90	5972	0.0007	**3.84**	**70.0**	**0.0007**	0%		42.21		53.67		57.03		58.13	-11.88	OK	NE					ok
												100% fwaub-x	0.75	42.95	1.34	55.01	1.41	58.45	1.43	59.56			X					
												100% fwaub-w	0.65	43.60	1.15	56.16	1.22	59.67	1.23	60.79			X					
RE*AUBURN3	R18H-58	R18H-57	72	0.013	127.46	127.63	82	-0.0021			0.0006	100% aub3-nw	1.43	45.04	1.88	58.04	1.99	61.66	2.01	62.80	62.80	72	2010	0.04	-0.17	-0.21	-0.21	IGNORE
RE*AUBURN3	R18H-57	R18H-56	72	0.013	127.60	127.10	582	0.0009	4.40	80.3	0.0006	0%		45.04		58.04		61.66		62.80	-17.50	OK	NE					
RE*AUBURN3	R18H-56	R18H-55	72	0.013	127.10	126.80	525	0.0006	3.59	65.5	0.0006	0%		45.04		58.04		61.66		62.80	-2.69	OK	NE					
RE*AUBURN3	R18H-55	R18H-54	72	0.013	126.80	126.50	513	0.0006	3.63	66.3	0.0006	0%		45.04		58.04		61.66		62.80	-3.45	OK	NE					
RE*AUBURN3	R18H-54	R18H-53	72	0.013	126.50	126.10	515	0.0008	4.19	76.4	0.0006	0%		45.04		58.04		61.66		62.80	-13.55	OK	NE	0.27	0.40	0.13	0.13	
RE*AUBURN3	R18H-53	R18H-52	72	0.013	126.10	125.80	578	0.0005	3.42	62.4	0.0006	0%		45.04		58.04		61.66		62.80	0.39	12	2050	0.30	0.30	0.00	0.00	IGNORE
RE*AUBURN3	R18H-52	R18H-51	72	0.013	125.80	125.50	530	0.0006	3.57	65.2	0.0006	0%		45.04		58.04		61.66		62.80	-2.38	OK	NE					
RE*AUBURN3	R18H-51	R18H-50	72	0.013	125.50	125.00	530	0.0009	4.61	84.1	0.0006	0%		45.04		58.04		61.66		62.80	-21.35	OK	NE					
RE*AUBURN3	R18H-50	R18H-49	72	0.013	125.00	124.70	311	0.0010	4.66	85.1	0.0006	0%		45.04		58.04		61.66		62.80	-22.29	OK	NE	0.16	0.30	0.14	-0.19	
RE*AUBURN3	R18H-49	R18H-48	72	0.013	124.70	124.50	1000	0.0002	2.12	38.7	0.0006	0%		45.04		58.04		61.66		62.80	24.06	51	2010	0.52	0.20	-0.32	-0.32	IGNORE
	Section*		72	0.013		2.96	5166	0.0006	**3.60**	**65.6**	**0.0006**	0%		45.04		58.04		61.66		62.80	-2.78	OK	NE					OK
TO KENT PLANNING ZONE												0%																
*RWSP pipe or section data revised.																												

APPENDIX 250-G

AUBURN PLANNING ZONE REROUTING ALTERNATIVE FLOW ROUTING WITH 20% I/I REDUCTION EFFECTIVE IN 2000

Task 250 Report:
AUBURN PLANNING ZONE - REROUTING ALTERNATIVE
20% I/I reduction effective in 2000

FACILITY	UP-STREAM MH #	DOWN-STREAM MH #	DIA. (IN)	Manning n	UP-STREAM INV ELEV	DOWN-STREAM INV ELEV	LENGTH (FT.)	SLOPE (FT/FT)	Vfull (FPS)	Cap. (MGD)	Herrera New Slope	Modification Origin of Flow Percent	2010 Design Flow Inflow (MGD)	2010 Design Flow Total (MGD)	2020 Design Flow Inflow (MGD)	2020 Design Flow Total (MGD)	2030 Design Flow Inflow (MGD)	2030 Design Flow Total (MGD)	2050 Design Flow Inflow (MGD)	2050 Design Flow Total (MGD)	Excess (MGD)	Parallel Pipe (in.)	Decade Exceeded	Surcharge: any negative value in "BW elev" elev FULL pipe	Δ elev	Δ−Δfull	BW elev (ft)	Proposed Diameter (inches)
do not delete this line																												
LAKELAND HILLS TRUNK (replace gravity pipe downstream from forcemain)												100% lh-pc	1.41	1.41	2.50	2.50	2.67	2.67	2.72	2.72			X					
												100% wr-x	3.12	4.52	5.16	7.66	5.48	8.15	5.54	8.26			X					
LH TRUNK	LH#1	LH#2	27	0.013	194.49	174.91	6896	0.0028	4.16	10.7	0.0028	0%		4.52		7.66		8.15		8.26	-2.42	OK	NE					27
																							X					
TO STK-1																												
STUCK TRUNK (divert from end of M St Trunk)												100% seg-x	1.02	1.02	1.56	1.56	1.65	1.65	1.66	1.66			X					
STUCK/ M ST #49	MST	LH#2	24	0.013	199.60	174.60	5000	0.0050	5.11	10.3	0.0050	70% mst-s	5.42	6.44	6.23	7.78	6.65	8.30	6.91	8.57	-1.78	OK	NE					24
												50% wi-x	4.40	10.84	4.89	12.67	5.15	13.45	5.15	13.72			X					
												100% LH TRUNK	4.52	15.36	7.66	20.33	8.15	21.60	8.26	21.98	21.98		X					
STUCK	LH#2	LH#3	36	0.013	173.60	167.45	1800	0.0034	5.53	25.2	0.0034	0%		15.36		20.33		21.60		21.98	-3.26	OK	NE					36
STUCK match ex.IE	LH#3	WINT#32	42	0.013	166.95	162.10	2851	0.0017	4.32	26.8	0.0017	0%		15.36		20.33		21.60		21.98	-4.86	OK	NE					42
STUCK match ex.inv	WINT#32	SW7	36	0.013	161.60	147.90	4500	0.0030	5.22	23.8	0.0030	0%		15.36		20.33		21.60		21.98	-1.83	OK	NE					36
	Section*						**14151**	**0.0132**														OK	NE					
TO SW-7																												
26TH ST. TRUNK (paralell to N Sewer. Trunk)																							X					
26th TRUNK	GR22-10	R18H-77	15	0.013	147.90	140.90	4297	0.0016	2.13	1.7	0.0008	100% mst-ne	0.92	0.92	1.41	1.41	1.51	1.51	1.57	1.57	-0.12	OK	NE					15
	Section*		**15**			**140.90**	**4297**	**0.0016**		**1.7**												OK	NE					
TO RE*AUBURN3.R18H-77																												
SOUTHWEST TRUNK 1 (uses ALPAC & AUBWVAL pipe data)												8% al-x	0.23	0.23	0.25	0.25	0.26	0.26	0.26	0.26			X					
												100% pac-x	2.24	2.47	2.70	2.94	2.88	3.14	2.97	3.24			X					
PACIFIC FM						2940						100% pac-a	2.08	4.55	2.61	5.55	2.77	5.91	2.79	6.03								
SW TRUNK	8	7	27	0.013	2939.50	149.65	12000	0.2325	37.66	96.6	0.2325	0%		4.55		5.55		5.91		6.03	-90.57	OK	NE					
	Section*		27	**0.013**		**2790**	**12000**	**0.2325**	**37.66**	**96.6**	0.2325	0%		4.55		5.55		5.91		6.03	-90.57	OK	NE					27
											0.0011	100% STUCK TRUNK	15.36	19.91	20.33	25.88	21.60	27.51	21.98	28.00			X					
SW TRUNK	7	6	54	0.013	147.40	146.99	380	0.0011	4.10	42.0	0.0011	100% fwne-w	1.96	21.88	3.43	29.31	3.63	31.14	3.66	31.66	-10.36	OK	NE					
SW TRUNK	6	5	54	0.013	146.99	146.40	538	0.0011	4.10	42.0	0.0011	10% aub3-s	0.12	22.00	0.14	29.46	0.15	31.29	0.16	31.82	-10.21	OK	NE					
SW TRUNK	5	4	54	0.013	146.40	145.88	475	0.0011	4.10	42.0	0.0011	0%		22.00		29.46		31.29		31.82	-10.21	OK	NE					
SW TRUNK	4	3	54	0.013	145.88	145.36	480	0.0011	4.10	42.0	0.0011	0%		22.00		29.46		31.29		31.82	-10.21	OK	NE					
SW TRUNK	3	2	54	0.013	145.36	144.83	482	0.0011	4.10	42.0	0.0011	0%		22.00		29.46		31.29		31.82	-10.21	OK	NE					
SW TRUNK	2	1	54	0.013	144.83	144.57	235	0.0011	4.10	42.0	0.0011	0%		22.00		29.46		31.29		31.82	-10.21	OK	NE					
	Section*		54	**0.013**		**2.83**	**2590**	**0.0011**	**4.10**	**42.0**	**0.0011**	0%		22.00		29.46		31.29		31.82	-10.21	OK	NE					54
I/I eliminates ±6000 LF												0%		22.00		29.46		31.29		31.82			X					***54***
SW TRUNK	3	2	54	0.013	144.57	138.67	5410	0.0011	4.10	42.0	0.0035	100% fwne-x	1.40	23.39	1.73	31.18	1.83	33.12	1.85	33.66	-8.36	OK	NE					
SW TRUNK	2	1	54	0.013	138.67	132.40	5500	0.0011	4.19	43.0	0.0035	100% fwaub-w	0.65	24.04	1.15	32.33	1.22	34.34	1.23	34.89	-8.06	OK	NE					
												100% fwaub-x	0.75	24.79	1.34	33.67	1.41	35.75	1.43	36.32			X					
SW TRUNK @Aub3#48	1	R18H-44	54	0.013	132.40	126.00	5000	0.0013	4.44	45.5	0.0035	50% aub3-nw	0.72	25.51	0.94	34.61	1.00	36.75	1.01	37.33	-8.18	OK	NE					
	Section*		54	**0.013**		**18.57**	**15,910**	**0.0035**	**7.35**	**75.4**	**0.0035**			25.51		34.61		36.75		37.33	-38.05	OK	NE					54
TO RE*AUBURN3.R18H-63																												

Task 250 Report:
AUBURN PLANNING ZONE - REROUTING ALTERNATIVE
20% I/I reduction effective in 2000

FACILITY	UP-STREAM MH #	DOWN-STREAM MH #	DIA. (IN)	Manning n	UP-STREAM INV ELEV	DOWN-STREAM INV ELEV	LENGTH (FT.)	SLOPE (FT/FT)	Vfull (FPS)	Cap. (MGD)	Herrera New Slope	Modification Origin of Flow Percent	2010 Design Flow Inflow (MGD)	2010 Design Flow Total (MGD)	2020 Design Flow Inflow (MGD)	2020 Design Flow Total (MGD)	2030 Design Flow Inflow (MGD)	2030 Design Flow Total (MGD)	2050 Design Flow Inflow (MGD)	2050 Design Flow Total (MGD)	Excess (MGD)	Parallel Pipe (in.)	Decade Exceeded	Surcharge: any negative value in "BW elev" elev FULL pipe	Δ elev	Δ−Δfull	BW elev (ft)	Proposed Diameter (inches)
do not delete this line																												
ALGONA-PACIFIC & WEST												0%											X					
RE*ALPAC FORCEMAIN		238	12	0.013	144.50	165.60	2940					0%											X					
RE*ALPAC	238	237	21	0.013	165.60	165.30	400	0.0007	1.81	2.8	0.0012	0%									-2.81	OK	NE					
RE*ALPAC	237	230	21	0.013	165.30	164.90	401	0.0010	2.09	3.2	0.0012	0%									-3.24	OK	NE					
RE*ALPAC	230	229	21	0.013	164.90	164.70	135	0.0015	2.54	3.9	0.0012	12% al-x	**0.34**	0.34	**0.37**	0.37	**0.39**	0.39	**0.40**	0.40	-3.55	OK	NE					
RE*ALPAC	229	228	21	0.013	164.70	164.40	275	0.0011	2.18	3.4	0.0012	0%		0.34		0.37		0.39		0.40	-2.99	OK	NE					
RE*ALPAC	228	251	21	0.013	164.40	163.90	241	0.0021	3.01	4.7	0.0012	0%		0.34		0.37		0.39		0.40	-4.28	OK	NE					
RE*ALPAC	251	252	21	0.013	163.90	163.60	366	0.0008	1.89	2.9	0.0012	0%		0.34		0.37		0.39		0.40	-2.54	OK	NE					
RE*ALPAC	252	253	21	0.013	163.60	163.20	328	0.0012	2.31	3.6	0.0012	0%		0.34		0.37		0.39		0.40	-3.19	OK	NE					
RE*ALPAC	253	254	21	0.013	163.20	162.90	165	0.0018	2.81	4.4	0.0012	0%		0.34		0.37		0.39		0.40	-3.97	OK	NE					
RE*ALPAC	254	256	21	0.013	162.90	162.60	300	0.0010	2.09	3.2	0.0012	0%		0.34		0.37		0.39		0.40	-2.84	OK	NE					
	Section*		21	0.013		3.00	2611	0.0011		**3.5**	**0.0011**	0%		0.34		0.37		0.39		0.40	-3.08	OK	NE					OK
RE*ALPAC	256	257	24	0.013	162.60	162.50	89	0.0011	2.42	4.9	0.0012	40% al-x	**1.14**	1.49	**1.24**	1.61	**1.31**	1.70	**1.32**	1.71	-3.19	OK	NE					
RE*ALPAC	257	258	24	0.013	162.50	162.20	251	0.0012	2.50	5.1	0.0012	0%		1.49		1.61		1.70		1.71	-3.35	OK	NE					
RE*ALPAC	258	259	24	0.013	162.20	161.90	248	0.0012	2.51	5.1	0.0012	0%		1.49		1.61		1.70		1.71	-3.38	OK	NE					
RE*ALPAC	259	260	24	0.013	161.90	161.70	241	0.0008	2.08	4.2	0.0012	0%		1.49		1.61		1.70		1.71	-2.50	OK	NE					
RE*ALPAC	260	261	24	0.013	161.70	161.40	241	0.0012	2.55	5.2	0.0012	0%		1.49		1.61		1.70		1.71	-3.45	OK	NE					
RE*ALPAC	261	290	24	0.013	161.40	161.20	185	0.0011	2.37	4.8	0.0012	0%		1.49		1.61		1.70		1.71	-3.10	OK	NE					
RE*ALPAC	290	293	24	0.013	161.20	160.80	421	0.0010	2.22	4.5	0.0012	0%		1.49		1.61		1.70		1.71	-2.80	OK	NE					
RE*ALPAC	293	304	24	0.013	160.80	160.30	438	0.0011	2.44	4.9	0.0012	0%		1.49		1.61		1.70		1.71	-3.23	OK	NE					
RE*ALPAC	304	305	24	0.013	160.30	159.90	460	0.0009	2.13	4.3	0.0012	0%		1.49		1.61		1.70		1.71	-2.60	OK	NE					
RE*ALPAC	305	306	24	0.013	159.90	159.40	440	0.0011	2.44	4.9	0.0012	0%		1.49		1.61		1.70		1.71	-3.22	OK	NE					
RE*ALPAC	306	307	24	0.013	159.40	159.00	446	0.0009	2.16	4.4	0.0012	0%		1.49		1.61		1.70		1.71	-2.67	OK	NE					
RE*ALPAC	307	308	24	0.013	159.00	158.60	434	0.0009	2.19	4.4	0.0012	0%		1.49		1.61		1.70		1.71	-2.73	OK	NE					
RE*ALPAC	308	309	24	0.013	158.60	158.10	441	0.0011	2.43	4.9	0.0012	0%		1.49		1.61		1.70		1.71	-3.22	OK	NE					
RE*ALPAC	309	309B	24	0.013	158.10	157.80	340	0.0009	2.15	4.3	0.0012	0%		1.49		1.61		1.70		1.71	-2.64	OK	NE					
RE*ALPAC	309B	R83-17	24	0.013	157.80	157.20	345	0.0017	3.01	6.1	0.0012	40% al-x	**1.14**	2.63	**1.24**	2.85	**1.31**	3.00	**1.32**	3.03	-3.07	OK	NE					
	Section*		24	0.013		5.40	5020	0.0011		**4.8**	**0.0011**	0%		2.63		2.85		3.00		3.03	-1.77	OK	NE					OK
RE*AUBWVAL	R83-17	R83-16	24	0.013	157.20	156.40	437	0.0018	3.09	6.3	0.0012	0%		2.63		2.85		3.00		3.03	-3.24	OK	NE					
RE*AUBWVAL	R83-16	R83-15	24	0.013	156.40	156.00	39	0.0103	7.31	14.8	0.0012	0%		2.63		2.85		3.00		3.03	-11.79	OK	NE					
RE*AUBWVAL	R83-15	R83-14	24	0.013	156.00	154.80	367	0.0033	4.13	8.4	0.0012	0%		2.63		2.85		3.00		3.03	-5.34	OK	NE					
RE*AUBWVAL	R83-14	R83-13	24	0.013	154.80	154.00	369	0.0022	3.36	6.8	0.0012	0%		2.63		2.85		3.00		3.03	-3.78	OK	NE					
RE*AUBWVAL	R83-13	R83-12	24	0.013	154.00	153.60	408	0.0010	2.26	4.6	0.0012	0%		2.63		2.85		3.00		3.03	-1.55	OK	NE					
RE*AUBWVAL	R83-12	R83-11	24	0.013	153.60	153.30	371	0.0008	2.05	4.2	0.0012	0%		2.63		2.85		3.00		3.03	-1.13	OK	NE					
RE*AUBWVAL	R83-11	R83-10	24	0.013	153.30	153.10	339	0.0006	1.75	3.6	0.0012	0%		2.63		2.85		3.00		3.03	-0.53	OK	NE	0.14	0.20	0.06	0.04	
RE*AUBWVAL	R83-10	R83-09	24	0.013	153.10	153.00	270	0.0004	1.39	2.8	0.0012	0%		2.63		2.85		3.00		3.03	0.21	9	2020	0.12	0.10	**-0.02**	-0.02	ignore
RE*AUBWVAL	R83-09	R83-08	24	0.013	153.00	152.50	221	0.0023	3.43	7.0	0.0012	0%		2.63		2.85		3.00		3.03	-3.93	OK	NE					
RE*AUBWVAL	R83-08	R83-07	24	0.013	152.50	152.10	467	0.0009	2.11	4.3	0.0012	0%		2.63		2.85		3.00		3.03	-1.25	OK	NE					
RE*AUBWVAL	R83-07	R83-06	24	0.013	152.10	151.80	380	0.0008	2.03	4.1	0.0012	0%		2.63		2.85		3.00		3.03	-1.08	OK	NE					
RE*AUBWVAL	R83-06	R83-05	24	0.013	151.80	151.20	538	0.0011	2.41	4.9	0.0012	0%		2.63		2.85		3.00		3.03	-1.86	OK	NE					
RE*AUBWVAL	R83-05	R83-04	24	0.013	151.20	150.80	475	0.0008	2.09	4.2	0.0012	0%		2.63		2.85		3.00		3.03	-1.22	OK	NE					
RE*AUBWVAL	R83-04	R83-03	24	0.013	150.80	150.20	480	0.0013	2.55	5.2	0.0012	0%		2.63		2.85		3.00		3.03	-2.14	OK	NE					
RE*AUBWVAL	R83-03	R83-02	24	0.013	150.20	149.80	482	0.0008	2.08	4.2	0.0012	0%		2.63		2.85		3.00		3.03	-1.18	OK	NE					
RE*AUBWVAL	R83-02	R83-01	24	0.013	149.80	149.20	235	0.0026	3.65	7.4	0.0012	0%		2.63		2.85		3.00		3.03	-4.36	OK	NE					
	Section		24	0.013		8.00	5878	0.0014	**2.66**	**5.4**	**0.0014**	0%		2.63		2.85		3.00		3.03	-2.37	OK	NE					OK

Task 250 Report:
AUBURN PLANNING ZONE - REROUTING ALTERNATIVE
20% I/I reduction effective in 2000

FACILITY	UP-STREAM MH #	DOWN-STREAM MH #	DIA. (IN)	Manning n	UP-STREAM INV ELEV	DOWN-STREAM INV ELEV	LENGTH (FT.)	SLOPE (FT/FT)	Vfull (FPS)	Cap. (MGD)	Herrera New Slope	Modification Origin of Flow Percent	2010 Design Flow Inflow (MGD)	2010 Design Flow Total (MGD)	2020 Design Flow Inflow (MGD)	2020 Design Flow Total (MGD)	2030 Design Flow Inflow (MGD)	2030 Design Flow Total (MGD)	2050 Design Flow Inflow (MGD)	2050 Design Flow Total (MGD)	Excess (MGD)	Parallel Pipe (in.)	Decade Exceeded	Surcharge: any negative value in "BW elev" elev FULL pipe	Δ elev	Δ−Δfull	BW elev (ft)	Proposed Diameter (inches)
												0%		2.63		2.85		3.00		3.03			X					
WVAL	R83-01*	81-2	36	0.013	149.15	148.95	375	0.0005	2.18	10.0	0.0038	10% aub3-s	0.12	2.75	0.14	2.99	0.15	3.16	0.16	3.19	-6.78	OK	NE					
WVAL	81-2*	81-1	30	0.013	149.00	148.50	210	0.0024	4.09	12.9	0.0038	0%		2.75		2.99		3.16		3.19	-9.76	OK	NE					
WVAL	81-1*	80-8	42	0.013	148.50	148.42	70	0.0011	3.54	22.0	0.0038	0%		2.75		2.99		3.16		3.19	-18.81	OK	NE					
WVAL Main St*	80-8*	80-7	42	0.013	148.42	147.60	335	0.0024	5.19	32.2	0.0038	0%		2.75		2.99		3.16		3.19	-29.01	OK	NE					
WVAL	80-7*	80-6	30	0.013	147.60	147.00	167	0.0036	5.02	15.9	0.0038	0%		2.75		2.99		3.16		3.19	-12.72	OK	NE					
WVAL	80-6*	80-5	30	0.013	147.00	146.10	482	0.0019	3.62	11.5	0.0038	30% aub3-s	0.36	3.11	0.43	3.43	0.46	3.62	0.47	3.66	-7.81	OK	NE					
WVAL	80-5*	80-3	30	0.013	146.10	145.16	510	0.0018	3.60	11.4	0.0038	0%		3.11		3.43		3.62		3.66	-7.74	OK	NE					
WVAL	80-3*	80-2	30	0.013	145.16	144.50	441	0.0015	3.24	10.3	0.0038	0%		3.11		3.43		3.62		3.66	-6.61	OK	NE					
WVAL	80-2*	80-1	30	0.013	144.50	143.70	450	0.0018	3.53	11.2	0.0038	0%		3.11		3.43		3.62		3.66	-7.53	OK	NE					
WVAL	80-1*	79-23	30	0.013	143.70	142.80	447	0.0020	3.76	11.9	0.0038	0%		3.11		3.43		3.62		3.66	-8.25	OK	NE					
WVAL	79-23*	79-22	30	0.013	142.80	142.25	465	0.0012	2.88	9.1	0.0038	0%		3.11		3.43		3.62		3.66	-5.47	OK	NE					
WVAL	79-22*	79-21	30	0.013	142.25	141.95	450.4	0.0007	2.16	6.8	0.0038	0%		3.11		3.43		3.62		3.66	-3.19	OK	NE					
WVAL	79-21*	79-20	30	0.013	141.95	141.70	409.5	0.0006	2.07	6.6	0.0038	0%		3.11		3.43		3.62		3.66	-2.90	OK	NE					
WVAL	79-20*	79-19	30	0.013	141.70	141.48	363	0.0006	2.06	6.5	0.0038	0%		3.11		3.43		3.62		3.66	-2.87	OK	NE					
WVAL	79-19*	79-18	30	0.013	141.48	141.26	361.5	0.0006	2.07	6.5	0.0038	0%		3.11		3.43		3.62		3.66	-2.89	OK	NE					
WVAL	79-18*	79-17	30	0.013	141.26	141.00	425	0.0006	2.07	6.6	0.0038	0%		3.11		3.43		3.62		3.66	-2.91	OK	NE					
WVAL	79-17*	79-16	42	0.013	140.89	139.87	260	0.0039	6.57	40.8	0.0038	0%		3.11		3.43		3.62		3.66	-37.11	OK	NE					
WVAL	79-16*	79-15X	30	0.013	139.87	139.67	360	0.0006	1.97	6.3	0.0038	0%		3.11		3.43		3.62		3.66	-2.60	OK	NE					
WVAL	79-15X*	79-15	30	0.013	139.67	139.04	90	0.0070	7.01	22.2	0.0038	0%		3.11		3.43		3.62		3.66	-18.54	OK	NE					
WVAL	79-15*	79-14	30	0.013	139.04	138.15	410	0.0022	3.90	12.4	0.0038	0%		3.11		3.43		3.62		3.66	-8.71	OK	NE					
WVAL	79-14*	1	30	0.013	138.15	137.92	388.5	0.0006	2.04	6.5	0.0038	0%		3.11		3.43		3.62		3.66	-2.80	OK	NE					
	Section*		24	0.013		11.23	7469.9	0.0015	**2.80**	**5.7**	0.0015	0%		3.11		3.43		3.62		3.66	-2.02	OK	NE					OK
WVAL	1*	79-13	42	0.013	137.92	136.50	380	0.0037	6.41	39.8	0.0038	0%		3.11		3.43		3.62		3.66	-36.13	OK	NE					
WVAL	79-13*	79-12	30	0.013	136.50	136.40	99.7	0.0010	2.65	8.4	0.0038	0%		3.11		3.43		3.62		3.66	-4.75	OK	NE					
											0.0038	0%		3.11		3.43		3.62		3.66			X					
WVAL	79-12*	79-11	30	0.013	136.40	135.95	483.7	0.0009	2.55	8.1	0.0038	25% aub3-s	0.30	3.41	0.36	3.79	0.38	4.00	0.39	4.05	-4.04	OK	NE					
WVAL	79-11*	79-10	30	0.013	135.95	135.70	289.2	0.0009	2.46	7.8	0.0038	0%		3.41		3.79		4.00		4.05	-3.75	OK	NE					
WVAL	79-10*	79-9	30	0.013	135.70	135.41	364	0.0008	2.37	7.5	0.0038	0%		3.41		3.79		4.00		4.05	-3.44	OK	NE					
WVAL	79-9*	79-8	30	0.013	135.41	135.12	361	0.0008	2.38	7.5	0.0038	0%		3.41		3.79		4.00		4.05	-3.48	OK	NE					
WVAL	79-8*	79-6	30	0.013	135.12	134.83	362	0.0008	2.37	7.5	0.0038	0%		3.41		3.79		4.00		4.05	-3.46	OK	NE					
WVAL	79-6*	79-5	30	0.013	134.83	134.50	411	0.0008	2.37	7.5	0.0038	0%		3.41		3.79		4.00		4.05	-3.47	OK	NE					
WVAL	79-5*	79-4	30	0.013	134.50	134.09	496.3	0.0008	2.41	7.6	0.0038	0%		3.41		3.79		4.00		4.05	-3.58	OK	NE					
WVAL	3*	79-3	30	0.013	134.09	133.70	490	0.0008	2.36	7.5	0.0038	0%		3.41		3.79		4.00		4.05	-3.44	OK	NE					
WVAL	79-3*	79-2	30	0.013	133.70	133.42	372.7	0.0008	2.30	7.3	0.0038	25% aub3-s	0.30	3.71	0.36	4.15	0.38	4.39	0.39	4.44	-2.83	OK	NE					
WVAL	79-2*	79-1	30	0.013	133.42	133.40	38.5	0.0005	1.91	6.0	0.0038	0%		3.71		4.15		4.39		4.44	-1.61	OK	NE					
WVAL	79-1*	R18H-65	42	0.013	133.40	133.19	12	0.0175	13.87	86.1	0.0038	0%		3.71		4.15		4.39		4.44	-81.66	OK	NE					
	Section*		30	0.013		4.73	4160.1	0.0011	**2.83**	**8.9**	0.0011	0%		3.71		4.15		4.39		4.44	-4.51	OK	NE					OK
TO AUBURN3.R18H-65																												

Task 250 Report:
AUBURN PLANNING ZONE - REROUTING ALTERNATIVE
20% I/I reduction effective in 2000

FACILITY	UP-STREAM MH #	DOWN-STREAM MH #	DIA. (IN)	Manning n	UP-STREAM INV ELEV	DOWN-STREAM INV ELEV	LENGTH (FT.)	SLOPE (FT/FT)	Vfull (FPS)	Cap. (MGD)	Herrera New Slope	Modification Origin of Flow Percent	2010 Design Flow Inflow (MGD)	2010 Design Flow Total (MGD)	2020 Design Flow Inflow (MGD)	2020 Design Flow Total (MGD)	2030 Design Flow Inflow (MGD)	2030 Design Flow Total (MGD)	2050 Design Flow Inflow (MGD)	2050 Design Flow Total (MGD)	Excess (MGD)	Parallel Pipe (in.)	Decade Exceeded	Surcharge: any negative value in "BW elev" elev FULL pipe	Δ elev	Δ−Δfull	BW elev (ft)	Proposed Diameter (inches)
WEST INTERCEPTOR												0%											X					
L. HILLS*			24	0.013	194.74	174.98	7269	0.0017	3.01	6.1	0.0027	0%									-6.10	OK	NE					
REPLACEMENT REQUIRED			27	0.013		19.76	7269	0.0027	**4.07**	**10.4**	**0.0027**	0%											X					
RE*WINTSEWR	GR27-44	GR27-43	24	0.013	174.98	172.67	329	0.0070	6.05	12.3	0.0236	0%									-12.26	OK	NE					
RE*WINTSEWR	GR27-43	GR27-42	24	0.013	172.67	170.67	295.3	0.0068	5.94	12.0	0.0236	0%									-12.05	OK	NE					
RE*WINTSEWR	GR27-42	GR27-41	24	0.013	170.67	168.78	268	0.0071	6.06	12.3	0.0236	0%									-12.29	OK	NE					
RE*WINTSEWR	GR27-41	GR27-40	24	0.013	168.78	168.52	123	0.0021	3.32	6.7	0.0236	0%									-6.73	OK	NE					
RE*WINTSEWR	GR27-40	GR27-39	24	0.013	168.52	167.20	411.7	0.0032	4.09	8.3	0.0236	0%									-8.28	OK	NE					
RE*WINTSEWR	GR27-39	GR27-38	24	0.013	167.20	166.40	399	0.0020	3.23	6.6	0.0236	0%									-6.55	OK	NE					
RE*WINTSEWR	GR27-38	GR27-37	24	0.013	166.40	165.60	410	0.0020	3.19	6.5	0.0236	0%									-6.46	OK	NE					
RE*WINTSEWR	GR27-37	GR27-36	24	0.013	165.60	164.80	411	0.0019	3.19	6.5	0.0236	0%									-6.46	OK	NE					
RE*WINTSEWR	GR27-36	GR27-35	24	0.013	164.80	163.90	410	0.0022	3.38	6.9	0.0236	0%									-6.86	OK	NE					
RE*WINTSEWR	GR27-35	GR27-34	24	0.013	163.90	163.10	419	0.0019	3.15	6.4	0.0236	0%									-6.39	OK	NE					
RE*WINTSEWR	GR27-34	GR27-33	24	0.013	163.10	162.50	414	0.0014	2.75	5.6	0.0236	0%									-5.57	OK	NE					
RE*WINTSEWR	GR27-33	GR27-32A	24	0.013	162.50	162.40	117	0.0009	2.11	4.3	0.0236	0%									-4.28	OK	NE					
RE*WINTSEWR	GR27-32A	GR27-32	24	0.013	162.40	162.10	160	0.0019	3.13	6.3	0.0236	0%									-6.34	OK	NE		0.30	0.30	0.29	
RE*WINTSEWR	GR27-32	GR27-31	24	0.013	162.10	162.00	111	0.0009	2.17	4.4	0.0236	45% wi-x	**3.96**	3.96	**4.40**	4.40	**4.64**	4.64	**4.63**	4.63	0.24	6	2020	0.11	0.10	**-0.01**	-0.01	ignore
CORRODED	REPLACE UPSTREAM		24	0.013		12.98	4278	0.0030	**3.98**	**8.1**	**0.0030**	0%		3.96		4.40		4.64		4.63	-3.42	OK	NE					LH GRAVITY
RE*WINTSEWR	GR27-31	GR27-30	24	0.013	162.00	161.50	239	0.0021	3.30	6.7	0.0236	0%		3.96		4.40		4.64		4.63	-2.06	OK	NE					
RE*WINTSEWR	GR27-30	GR27-29	24	0.013	161.50	161.40	64	0.0016	2.86	5.8	0.0236	0%		3.96		4.40		4.64		4.63	-1.15	OK	NE					
RE*WINTSEWR	GR27-29	GR27-28	24	0.013	161.40	160.80	409	0.0015	2.77	5.6	0.0236	0%		3.96		4.40		4.64		4.63	-0.97	OK	NE					
RE*WINTSEWR	GR27-28	GR27-27	24	0.013	160.80	160.20	410	0.0015	2.76	5.6	0.0236	0%		3.96		4.40		4.64		4.63	-0.97	OK	NE					
RE*WINTSEWR	GR27-27	GR27-26	24	0.013	160.20	159.60	398	0.0015	2.80	5.7	0.0236	0%		3.96		4.40		4.64		4.63	-1.05	OK	NE					
RE*WINTSEWR	GR27-26	GR27-25	24	0.013	159.60	158.20	248	0.0056	5.42	11.0	0.0236	0%		3.96		4.40		4.64		4.63	-6.36	OK	NE					
	Section*		24	0.013		3.80	1768	0.0021	**3.35**	**6.8**	**0.0021**	0%		3.96		4.40		4.64		4.63	-2.15	OK	NE					OK
RE*WINTSEWR	GR27-25	GR27-24	36	0.013	158.20	157.60	433	0.0014	3.52	16.1	0.0236	0%		3.96		4.40		4.64		4.63	-11.43	OK	NE					
RE*WINTSEWR	GR27-24	GR27-23	36	0.013	157.60	157.00	445	0.0013	3.47	15.8	0.0236	0%		3.96		4.40		4.64		4.63	-11.21	OK	NE					
RE*WINTSEWR	GR27-23	GR27-22	36	0.013	157.00	156.50	445	0.0011	3.17	14.5	0.0236	0%		3.96		4.40		4.64		4.63	-9.83	OK	NE					
RE*WINTSEWR	GR27-22	GR27-21	36	0.013	156.50	155.90	443	0.0014	3.48	15.9	0.0236	0%		3.96		4.40		4.64		4.63	-11.24	OK	NE					
RE*WINTSEWR	GR27-21	GR27-20	36	0.013	155.90	155.50	310	0.0013	3.40	15.5	0.0236	0%		3.96		4.40		4.64		4.63	-10.86	OK	NE					
RE*WINTSEWR	GR27-20	GR27-19	36	0.013	155.50	154.90	421	0.0014	3.57	16.3	0.0236	0%		3.96		4.40		4.64		4.63	-11.66	OK	NE					
RE*WINTSEWR	GR27-19	GR27-18	36	0.013	154.90	154.20	444	0.0016	3.76	17.1	0.0236	0%		3.96		4.40		4.64		4.63	-12.49	OK	NE					
RE*WINTSEWR	GR27-18	GR27-17	36	0.013	154.20	153.10	498	0.0022	4.45	20.3	0.0236	0%		3.96		4.40		4.64		4.63	-15.64	OK	NE					
RE*WINTSEWR*	GR27-17	GR27-16	36	0.013	153.10	153.00	490	0.0002	1.35	6.2	0.0236	0%		3.96		4.40		4.64		4.63	-1.53	OK	NE					
RE*WINTSEWR	GR27-16	GR27-15	36	0.013	153.00	152.40	499	0.0012	3.28	15.0	0.0236	0%		3.96		4.40		4.64		4.63	-10.33	OK	NE					
RE*WINTSEWR	GR27-15	GR27-14	36	0.013	152.40	151.80	488	0.0012	3.32	15.1	0.0236	0%		3.96		4.40		4.64		4.63	-10.49	OK	NE					
	Section		36	0.013		6.40	4916	0.0013	**3.41**	**15.6**	**0.0013**	0%		3.96		4.40		4.64		4.63	-10.93	OK	NE					OK
RE*WINTSEWR	GR27-14	GR27-13	42	0.013	151.80	151.20	543	0.0011	3.49	21.6	0.0236	0%		3.96		4.40		4.64		4.63	-17.00	OK	NE					
RE*WINTSEWR	GR27-13	GR27-12B	42	0.013	151.20	150.90	110	0.0027	5.48	34.0	0.0236	0%		3.96		4.40		4.64		4.63	-29.35	OK	NE					
RE*WINTSEWR	GR27-12B	GR27-12	42	0.013	150.90	150.80	250	0.0004	2.10	13.0	0.0236	0%		3.96		4.40		4.64		4.63	-8.39	OK	NE					
RE*WINTSEWR	GR27-12	GR27-11	42	0.013	150.80	150.40	309	0.0013	3.77	23.4	0.0236	0%		3.96		4.40		4.64		4.63	-18.79	OK	NE					
RE*WINTSEWR	GR27-11	GR27-10	42	0.013	150.40	150.00	428	0.0009	3.21	19.9	0.0236	0%		3.96		4.40		4.64		4.63	-15.26	OK	NE					
RE*WINTSEWR	GR27-10	GR27-09	42	0.013	150.00	149.80	206	0.0010	3.27	20.3	0.0236	0%		3.96		4.40		4.64		4.63	-15.64	OK	NE					
	Section*		42	0.013		2.00	1846	0.0011	3.45	21.4		0%		3.96		4.40		4.64		4.63	-16.79	OK	NE					
RE*WINTSEWR	GR27-09	GR27-08	42	0.013	149.80	149.10	503	0.0014	3.91	24.3	0.0236	0%		3.96		4.40		4.64		4.63	-19.64	OK	NE					
RE*WINTSEWR	GR27-08	GR27-07	42	0.013	149.10	148.50	499	0.0012	3.64	22.6	0.0236	0%		3.96		4.40		4.64		4.63	-17.93	OK	NE					
RE*WINTSEWR	GR27-07	GR27-06	42	0.013	148.50	147.80	479	0.0015	4.01	24.9	0.0236	0%		3.96		4.40		4.64		4.63	-20.24	OK	NE					
RE*WINTSEWR	GR27-06	GR27-05	42	0.013	147.80	147.30	426	0.0012	3.59	22.3	0.0236	0%		3.96		4.40		4.64		4.63	-17.66	OK	NE					
RE*WINTSEWR	GR27-05	GR27-04	42	0.013	147.30	146.80	398	0.0013	3.72	23.1	0.0236	0%		3.96		4.40		4.64		4.63	-18.44	OK	NE					
RE*WINTSEWR	GR27-04	GR27-03	42	0.013	146.80	146.60	121	0.0017	4.26	26.5	0.0236	0%		3.96		4.40		4.64		4.63	-21.82	OK	NE					
RE*WINTSEWR	GR27-03	GR27-02	42	0.013	146.60	145.70	636	0.0014	3.94	24.5	0.0236	0%		3.96		4.40		4.64		4.63	-19.85	OK	NE					
RE*WINTSEWR	GR27-02	GR27-01	42	0.013	145.70	144.80	628	0.0014	3.97	24.6	0.0236	5% wi-x	**0.44**	4.40	**0.49**	4.89	**0.52**	5.15	**0.51**	5.15	-19.49	OK	NE					
RE*WINTSEWR	GR27-01	R18H-78A	42	0.013	144.80	144.50	65	0.0046	7.12	44.2	0.0236	0%		4.40		4.89		5.15		5.15	-39.06	OK	NE					
	Section*		42	0.013		5.30	3755	0.0014	**3.94**	**24.5**	**0.0014**	0%		4.40		4.89		5.15		5.15	-19.30	OK	NE					OK
TO AUBURN3.R18H-78A																												

Task 250 Report:
AUBURN PLANNING ZONE - REROUTING ALTERNATIVE
20% I/I reduction effective in 2000

FACILITY	UP-STREAM MH #	DOWN-STREAM MH #	DIA. (IN)	Manning n	UP-STREAM INV ELEV	DOWN-STREAM INV ELEV	LENGTH (FT.)	SLOPE (FT/FT)	Vfull (FPS)	Cap. (MGD)	Herrera New Slope	Modification Origin of Flow Percent	2010 Design Flow Inflow (MGD)	2010 Design Flow Total (MGD)	2020 Design Flow Inflow (MGD)	2020 Design Flow Total (MGD)	2030 Design Flow Inflow (MGD)	2030 Design Flow Total (MGD)	2050 Design Flow Inflow (MGD)	2050 Design Flow Total (MGD)	Excess (MGD)	Parallel Pipe (in.)	Decade Exceeded	Surcharge: any negative value in "BW elev" elev FULL pipe	Δ elev	Δ−Δfull	BW elev (ft)	Proposed Diameter (inches)
RE*MSTTRUNK	GR19-49	GR19-48	18	0.013	200.10	199.10	422	0.0024	2.90	3.3	0.0036	0%									-3.31	OK	NE					
RE*MSTTRUNK	GR19-48	GR19-47	18	0.013	199.10	198.30	385	0.0021	2.72	3.1	0.0036	0%									-3.10	OK	NE					
RE*MSTTRUNK	GR19-47	GR19-46	18	0.013	198.30	198.05	102	0.0025	2.95	3.4	0.0036	0%									-3.36	OK	NE					
RE*MSTTRUNK	GR19-46*	GR19-45	18	0.013	198.05	197.10	414	0.0023	2.86	3.3	0.0036	0%									-3.26	OK	NE					
RE*MSTTRUNK	GR19-45	GR19-44	18	0.013	197.10	196.40	322	0.0022	2.78	3.2	0.0036	0%									-3.17	OK	NE					
RE*MSTTRUNK	GR19-44	GR20-43	18	0.013	196.40	195.60	330	0.0024	2.94	3.3	0.0036	7% mst-s	0.54	0.54	0.62	0.62	0.66	0.66	0.69	0.69	-2.66	OK	NE					
	Section		18	0.013		4.50	1975	0.0023	**2.85**	**3.2**	**0.0023**	0%		0.54		0.62		0.66		0.69	-2.55	OK	NE					OK
RE*MSTTRUNK	GR20-43	GR20-42	18	0.013	195.60	194.00	308	0.0052	4.30	4.9	0.0036	0%		0.54		0.62		0.66		0.69	-4.21	OK	NE					
RE*MSTTRUNK	GR20-42	GR20-41	18	0.013	194.00	192.40	320	0.0050	4.22	4.8	0.0036	0%		0.54		0.62		0.66		0.69	-4.12	OK	NE					
RE*MSTTRUNK	GR20-41	GR20-40	18	0.013	192.40	190.80	321	0.0050	4.21	4.8	0.0036	0%		0.54		0.62		0.66		0.69	-4.11	OK	NE					
RE*MSTTRUNK	GR20-40	GR21-39	18	0.013	190.80	188.90	362	0.0052	4.32	4.9	0.0036	0%		0.54		0.62		0.66		0.69	-4.23	OK	NE					
RE*MSTTRUNK	GR21-39	GR21-38	18	0.013	188.90	187.30	329	0.0049	4.16	4.7	0.0036	0%		0.54		0.62		0.66		0.69	-4.05	OK	NE					
RE*MSTTRUNK	GR21-38	GR21-37	18	0.013	187.30	185.60	340	0.0050	4.22	4.8	0.0036	8% mst-s	0.62	1.16	0.71	1.33	0.76	1.42	0.79	1.48	-3.33	OK	NE					
RE*MSTTRUNK	GR21-37	GR21-36A	18	0.013	185.60	185.20	77	0.0052	4.30	4.9	0.0036	0%		1.16		1.33		1.42		1.48	-3.42	OK	NE					
RE*MSTTRUNK	GR21-36A	GR21-36	18	0.013	185.20	183.90	252	0.0052	4.28	4.9	0.0036	0%		1.16		1.33		1.42		1.48	-3.40	OK	NE					
RE*MSTTRUNK	GR21-36	GR21-35	18	0.013	183.90	180.20	285	0.0130	6.79	7.7	0.0036	0%		1.16		1.33		1.42		1.48	-6.26	OK	NE					
RE*MSTTRUNK	GR21-35	GR21-34	18	0.013	180.20	178.40	342	0.0053	4.32	4.9	0.0036	0%		1.16		1.33		1.42		1.48	-3.45	OK	NE					
RE*MSTTRUNK	GR21-34	GR21-33	18	0.013	178.40	176.20	428	0.0051	4.27	4.9	0.0036	0%		1.16		1.33		1.42		1.48	-3.39	OK	NE					
RE*MSTTRUNK	GR21-33	GR21-32	18	0.013	176.20	174.10	430	0.0049	4.16	4.7	0.0036	0%		1.16		1.33		1.42		1.48	-3.27	OK	NE					
RE*MSTTRUNK	GR21-32	GR21-31	18	0.013	174.10	172.10	383	0.0052	4.31	4.9	0.0036	15% mst-s	1.16	2.32	1.33	2.67	1.42	2.85	1.48	2.96	-1.95	OK	NE					
RE*MSTTRUNK	GR21-31	GR22-30	18	0.013	172.10	170.20	382	0.0050	4.20	4.8	0.0036	0%		2.32		2.67		2.85		2.96	-1.83	OK	NE					
	Section*		18	0.013		25.40	4559	0.0056	**4.45**	**5.1**	**0.0056**	0%		2.32		2.67		2.85		2.96	-2.11	OK	NE					OK
RE*MSTTRUNK	GR22-30*	GR22-29	24	0.013	163.70	163.40	177	0.0017	2.97	6.0	0.0036	0%		2.32		2.67		2.85		2.96	-3.06	OK	NE					
RE*MSTTRUNK	GR22-29*	GR22-28	24	0.013	163.40	163.10	165	0.0018	3.08	6.2	0.0036	0%		2.32		2.67		2.85		2.96	-3.28	OK	NE					
RE*MSTTRUNK	GR22-28*	GR22-27	24	0.013	163.10	162.80	167	0.0018	3.06	6.2	0.0036	0%		2.32		2.67		2.85		2.96	-3.24	OK	NE					
RE*MSTTRUNK	GR22-27*	GR22-26	24	0.013	162.80	162.50	160	0.0019	3.13	6.3	0.0036	0%		2.32		2.67		2.85		2.96	-3.37	OK	NE					
RE*MSTTRUNK	GR22-26*	GR22-25	24	0.013	162.50	162.30	153	0.0013	2.61	5.3	0.0036	0%		2.32		2.67		2.85		2.96	-2.33	OK	NE					
RE*MSTTRUNK	GR22-25*	GR22-24	24	0.013	162.30	162.00	128	0.0023	3.50	7.1	0.0036	0%		2.32		2.67		2.85		2.96	-4.12	OK	NE					
	Section*		24	0.013		1.70	950	0.0018	**3.06**	**6.2**	**0.0018**	0%		2.32		2.67		2.85		2.96	-3.23	OK	NE					OK
RE*MSTTRUNK	GR22-24*	GR22-23	30	0.013	162.00	161.70	659	0.0005	1.79	5.7	0.0036	0%		2.32		2.67		2.85		2.96	-2.70	OK	NE					
RE*MSTTRUNK	GR22-23*	GR22-22B	30	0.013	161.70	161.30	605	0.0007	2.16	6.8	0.0036	0%		2.32		2.67		2.85		2.96	-3.86	OK	NE					
RE*MSTTRUNK	GR22-22B*	GR22-22A	30	0.013	161.30	161.10	302	0.0007	2.16	6.8	0.0036	0%		2.32		2.67		2.85		2.96	-3.86	OK	NE					
RE*MSTTRUNK	GR22-22A*	GR22-22	30	0.013	161.11	160.42	203	0.0034	4.87	15.4	0.0036	0%		2.32		2.67		2.85		2.96	-12.48	OK	NE					
RE*MSTTRUNK	GR22-22*	GR22-21A	30	0.013	160.42	159.79	188	0.0034	4.87	15.4	0.0036	0%		2.32		2.67		2.85		2.96	-12.48	OK	NE					
RE*MSTTRUNK	GR22-21A*	GR22-21	30	0.013	159.79	159.64	20	0.0073	7.18	22.7	0.0036	100% mst-e	2.67	4.99	3.26	5.93	3.47	6.32	3.54	6.51	-16.23	OK	NE					
RE*MSTTRUNK	GR22-21*	GR22-20	30	0.013	159.60	158.90	357	0.0020	3.71	11.7	0.0036	0%		4.99		5.93		6.32		6.51	-5.24	OK	NE					
RE*MSTTRUNK	GR22-20*	GR22-19	30	0.013	158.80	158.00	400	0.0020	3.75	11.9	0.0036	0%		4.99		5.93		6.32		6.51	-5.36	OK	NE					
RE*MSTTRUNK	GR22-19*	GR22-18	30	0.013	157.90	156.90	487	0.0021	3.80	12.0	0.0036	0%		4.99		5.93		6.32		6.51	-5.52	OK	NE					
RE*MSTTRUNK	GR22-18	GR22-17A	30	0.013	156.90	156.10	336	0.0024	4.09	12.9	0.0036	80% mst-n	1.21	6.20	1.37	7.30	1.47	7.79	1.57	8.08	-4.87	OK	NE					
RE*MSTTRUNK	GR22-17A	GR22-17	30	0.013	156.10	155.60	240	0.0021	3.82	12.1	0.0036	0%		6.20		7.30		7.79		8.08	-4.03	OK	NE					
RE*MSTTRUNK	GR22-17	GR22-16	30	0.013	155.60	155.40	59	0.0034	4.88	15.5	0.0036	0%		6.20		7.30		7.79		8.08	-7.38	OK	NE					
RE*MSTTRUNK	GR22-16	GR22-15	30	0.013	155.40	153.90	729	0.0021	3.80	12.0	0.0036	0%		6.20		7.30		7.79		8.08	-3.96	OK	NE					
RE*MSTTRUNK	GR22-15	GR22-14	30	0.013	153.90	153.80	13	0.0077	7.35	23.3	0.0036	0%		6.20		7.30		7.79		8.08	-15.19	OK	NE					
RE*MSTTRUNK	GR22-14	GR22-13A	30	0.013	153.80	152.50	687	0.0019	3.64	11.5	0.0036	0%		6.20		7.30		7.79		8.08	-3.47	OK	NE					
RE*MSTTRUNK	GR22-13A	GR22-13	30	0.013	152.50	151.80	236	0.0030	4.56	14.5	0.0036	0%		6.20		7.30		7.79		8.08	-6.38	OK	NE					
RE*MSTTRUNK	GR22-13	GR22-12A	30	0.013	151.80	151.50	134	0.0022	3.96	12.6	0.0036	0%		6.20		7.30		7.79		8.08	-4.48	OK	NE					
RE*MSTTRUNK	GR22-12A	GR22-12	30	0.013	151.50	150.30	518	0.0023	4.03	12.8	0.0036	0%		6.20		7.30		7.79		8.08	-4.70	OK	NE					
RE*MSTTRUNK	GR22-12	GR22-11	30	0.013	150.30	148.30	652	0.0031	4.64	14.7	0.0036	0%		6.20		7.30		7.79		8.08	-6.62	OK	NE					
	Section*		30	0.013		13.70	6825	0.0020	**3.75**	**11.9**	**0.0020**	0%		6.20		7.30		7.79		8.08	-3.81	OK	NE					OK
RE*MSTTRUNK	GR22-11	GR22-10	36	0.013	148.30	147.90	704	0.0006	2.26	10.3	0.0008	0%		6.20		7.30		7.79		8.08	-2.21	OK	NE					
												100% sss-sw	0.80	7.00	1.12	8.42	1.19	8.98	1.22	9.30			X					
RE*MSTTRUNK	GR22-10	GR22-08A	36	0.013	147.90	147.00	1079	0.0008	2.73	12.5	0.0008	20% mst-n	0.30	7.30	0.34	8.76	0.37	9.35	0.39	9.69	-2.77	OK	NE					
RE*MSTTRUNK	GR22-08A	GR22-07	36	0.013	147.00	146.60	528	0.0008	2.60	11.9	0.0008	0%		7.30		8.76		9.35		9.69	-2.18	OK	NE					
RE*MSTTRUNK	GR22-07	GR22-06	36	0.013	146.60	146.40	237	0.0008	2.75	12.5	0.0008	0%		7.30		8.76		9.35		9.69	-2.84	OK	NE					
RE*MSTTRUNK	GR22-06	GR22-05	36	0.013	146.40	146.30	13	0.0077	8.30	37.8	0.0008	0%		7.30		8.76		9.35		9.69	-28.15	OK	NE					
RE*MSTTRUNK	GR22-05	GR22-04	36	0.013	146.30	146.10	269	0.0007	2.58	11.8	0.0008	0%		7.30		8.76		9.35		9.69	-2.08	OK	NE					
RE*MSTTRUNK	GR22-04	GR22-02A	36	0.013	146.10	145.60	655	0.0008	2.61	11.9	0.0008	0%		7.30		8.76		9.35		9.69	-2.23	OK	NE					
RE*MSTTRUNK	GR22-02A	GR22-02	36	0.013	145.60	145.30	348	0.0009	2.78	12.7	0.0008	0%		7.30		8.76		9.35		9.69	-2.98	OK	NE					
RE*MSTTRUNK	GR22-02*	R18H-78A	36	0.013	145.20	144.80	464	0.0009	2.78	12.7	0.0008	0%		7.30		8.76		9.35		9.69	-2.98	OK	NE					
	Section*		36	0.013		3.50	4297	0.0008	**2.70**	**12.3**	**0.0008**	0%		7.30		8.76		9.35		9.69	-2.62	OK	NE					OK
TO AUBURN3.R18H-78A																												

Task 250 Report:
AUBURN PLANNING ZONE - REROUTING ALTERNATIVE
20% I/I reduction effective in 2000

FACILITY	UP-STREAM MH #	DOWN-STREAM MH #	DIA. (IN)	Manning n	UP-STREAM INV ELEV	DOWN-STREAM INV ELEV	LENGTH (FT.)	SLOPE (FT/FT)	Vfull (FPS)	Cap. (MGD)	Herrera New Slope	Modification Origin of Flow Percent	2010 Design Flow Inflow (MGD)	2010 Design Flow Total (MGD)	2020 Design Flow Inflow (MGD)	2020 Design Flow Total (MGD)	2030 Design Flow Inflow (MGD)	2030 Design Flow Total (MGD)	2050 Design Flow Inflow (MGD)	2050 Design Flow Total (MGD)	Excess (MGD)	Parallel Pipe (in.)	Decade Exceeded	Surcharge: any negative value in "BW elev" elev FULL pipe	Δ elev	Δ−Δfull	BW elev (ft)	Proposed Diameter (inches)
AUBURN 3 TRUNK												100% MSTTRK	7.30	7.30	8.76	8.76	9.35	9.35	9.69	9.69			X					
												100% WINTSEWR	4.40	11.70	4.89	13.65	5.15	14.51	5.15	14.84			X					
RE*AUBURN3	R18H-78A	R18H-78	42	0.013	144.50	143.70	123	0.0065	8.46	52.5	0.0021	0%		11.70		13.65		14.51		14.84	-37.65	OK	NE					
RE*AUBURN3	R18H-78	R18H-77	42	0.013	143.70	140.90	480	0.0058	8.01	49.7	0.0021	0%		11.70		13.65		14.51		14.84	-34.87	OK	NE					
											0.0021	100% 26TH ST. TRUNK	0.92	12.62	1.41	15.06	1.51	16.02	1.57	16.41			X					
RE*AUBURN3	R18H-77	R18H-76	42	0.013	140.90	138.10	480	0.0058	8.01	49.7	0.0021	0%		12.62		15.06		16.02		16.41	-33.30	OK	NE					
RE*AUBURN3	R18H-76	R18H-75	42	0.013	138.10	135.30	480	0.0058	8.01	49.7	0.0021	0%		12.62		15.06		16.02		16.41	-33.30	OK	NE					
RE*AUBURN3	R18H-75	R18H-74	42	0.013	135.30	132.60	480	0.0056	7.86	48.8	0.0021	0%		12.62		15.06		16.02		16.41	-32.41	OK	NE					
	Section		42	0.013		11.90	2043	0.0058	**8.00**	**49.7**	**0.0058**	0%		12.62		15.06		16.02		16.41	-33.26	OK	NE					OK
RE*AUBURN3	R18H-74	R18H-73	72	0.013	131.40	131.00	162	0.0025	7.46	136.1	0.0021	100% aub3-c	2.48	15.11	3.28	18.34	3.50	19.52	3.62	20.03	-116.10	OK	NE	0.01	0.40	0.39	0.26	
RE*AUBURN3	R18H-73	R18H-72	72	0.013	131.00	131.10	499	-0.0002			0.0021	0%		15.11		18.34		19.52		20.03	20.03	39	2010	0.03	-0.10	-0.13	-0.13	ignore
RE*AUBURN3	R18H-72	R18H-71	72	0.013	131.10	130.80	500	0.0006	3.68	67.1	0.0021	0%		15.11		18.34		19.52		20.03	-47.08	OK	NE					
RE*AUBURN3	R18H-71	R18H-70	72	0.013	130.80	130.60	365	0.0005	3.52	64.1	0.0021	0%		15.11		18.34		19.52		20.03	-44.10	OK	NE					
RE*AUBURN3	R18H-70	R18H-69	72	0.013	130.60	130.50	363	0.0003	2.49	45.5	0.0021	0%		15.11		18.34		19.52		20.03	-25.44	OK	NE					
RE*AUBURN3	R18H-69	R18H-68	72	0.013	130.50	130.30	84	0.0024	7.33	133.7	0.0021	0%		15.11		18.34		19.52		20.03	-113.65	OK	NE					
RE*AUBURN3	R18H-68	R18H-67	72	0.013	130.30	130.10	421	0.0005	3.27	59.7	0.0021	0%		15.11		18.34		19.52		20.03	-39.69	OK	NE					
RE*AUBURN3	R18H-67	R18H-66	72	0.013	130.10	129.80	489	0.0006	3.72	67.9	0.0021	0%		15.11		18.34		19.52		20.03	-47.83	OK	NE					
RE*AUBURN3	R18H-66	R18H-65	72	0.013	129.80	129.20	489	0.0012	5.26	96.0	0.0021	0%		15.11		18.34		19.52		20.03	-75.94	OK	NE					
											0.0021	100% WEST VALLEY	3.71	18.81	4.15	22.49	4.39	23.91	4.44	24.47			X					
											0.0021	0%		18.81		22.49		23.91		24.47			X					
RE*AUBURN3	R18H-65	R18H-64	72	0.013	129.20	128.90	610	0.0005	3.33	60.8	0.0021	0%		18.81		22.49		23.91		24.47	-36.29	OK	NE					
RE*AUBURN3	R18H-64	R18H-63	72	0.013	128.90	128.60	612	0.0005	3.33	60.7	0.0021	0%		18.81		22.49		23.91		24.47	-36.19	OK	NE					
RE*AUBURN3	R18H-63	R18H-62	72	0.013	128.60	128.50	87	0.0011	5.09	92.9	0.0021	0%		18.81		22.49		23.91		24.47	-68.41	OK	NE					
RE*AUBURN3	R18H-62	R18H-61	72	0.013	128.50	128.30	275	0.0007	4.05	73.9	0.0021	0%		18.81		22.49		23.91		24.47	-49.41	OK	NE					
RE*AUBURN3	R18H-61	R18H-59	72	0.013	128.30	127.90	556	0.0007	4.03	73.5	0.0021	0%		18.81		22.49		23.91		24.47	-49.01	OK	NE					
RE*AUBURN3	R18H-59	R18H-58	72	0.013	127.90	127.50	460	0.0009	4.43	80.8	0.0021	0%		18.81		22.49		23.91		24.47	-56.32	OK	NE					
	Section*		72	0.013		3.90	5972	0.0007	**3.84**	**70.0**	**0.0007**	0%		18.81		22.49		23.91		24.47	-45.54	OK	NE					OK
												0%		18.81		22.49		23.91		24.47			X					
												0%		18.81		22.49		23.91		24.47			X					
												50% aub3-nw	0.72	19.53	0.94	23.43	1.00	24.91	1.01	25.48			X					
RE*AUBURN3	R18H-58	R18H-57	72	0.013	127.46	127.63	82	-0.0021			0.0006	0%		19.53		23.43		24.91		25.48	25.48	51	2010	0.01	-0.17	-0.18	-0.18	ignore
RE*AUBURN3	R18H-57	R18H-56	72	0.013	127.60	127.10	582	0.0009	4.40	80.3	0.0006	0%		19.53		23.43		24.91		25.48	-54.83	OK	NE					
RE*AUBURN3	R18H-56	R18H-55	72	0.013	127.10	126.80	525	0.0006	3.59	65.5	0.0006	0%		19.53		23.43		24.91		25.48	-40.02	OK	NE					
RE*AUBURN3	R18H-55	R18H-54	72	0.013	126.80	126.50	513	0.0006	3.63	66.3	0.0006	0%		19.53		23.43		24.91		25.48	-40.78	OK	NE					
RE*AUBURN3	R18H-54	R18H-53	72	0.013	126.50	126.10	515	0.0008	4.19	76.4	0.0006	0%		19.53		23.43		24.91		25.48	-50.88	OK	NE					
RE*AUBURN3	R18H-53	R18H-52	72	0.013	126.10	125.80	578	0.0005	3.42	62.4	0.0006	0%		19.53		23.43		24.91		25.48	-36.94	OK	NE					
RE*AUBURN3	R18H-52	R18H-51	72	0.013	125.80	125.50	530	0.0006	3.57	65.2	0.0006	0%		19.53		23.43		24.91		25.48	-39.71	OK	NE					
RE*AUBURN3	R18H-51	R18H-50	72	0.013	125.50	125.00	530	0.0009	4.61	84.1	0.0006	0%		19.53		23.43		24.91		25.48	-58.67	OK	NE					
RE*AUBURN3	R18H-50	R18H-49	72	0.013	125.00	124.70	311	0.0010	4.66	85.1	0.0006	0%		19.53		23.43		24.91		25.48	-59.62	OK	NE					
RE*AUBURN3	R18H-49	R18H-48	72	0.013	124.70	124.50	1000	0.0002	2.12	38.7	0.0006	0%		19.53		23.43		24.91		25.48	-13.27	OK	NE					
	Section*		72	0.013		2.96	5166	0.0006	**3.60**	**65.6**	**0.0006**	0%		19.53		23.43		24.91		25.48	-40.11	OK	NE					OK
TO KENT PLANNING ZONE														**45.04**		**58.04**		**61.66**	**62.8**	**62.80**	**CHECK**							
*RWSP pipe or section data revised.																												

APPENDIX 250-H

KENT PLANNING ZONE PARALLEL ALTERNATIVE FLOW ROUTING WITH 20% I/I REDUCTION EFFECTIVE IN 2000

Task 250 Report:
KENT PLANNING ZONE - PARALLEL PIPE ALTERNATIVE
20% I/I reduction effective in 2000

FACILITY	UP-STREAM MH #	DOWN-STREAM MH #	DIA (IN)	Manning n	UP-STREAM INV ELEV	DOWN-STREAM INV ELEV	LENGTH (FT.)	SLOPE (FT/FT)	Vfull (FPS)	Cap. (MGD)	Herrera New Slope	Modification Origin of Flow (%)	2010 Design Flow 2010 Inflow (MGD)	2010 Design Flow Total (MGD)	2020 Design Flow 2020Inflow (MGD)	2020 Design Flow Total (MGD)	2030 Design Flow 2030 Inflow (MGD)	2030 Design Flow Total (MGD)	2050 Design Flow 2050 Inflow (MGD)	2050 Design Flow Total (MGD)	Excess (MGD)	2050 Parallel Pipe (in.)	Decade Exceeded	Surcharge: any negative value in "BW elev" Δ elev FULL pipe	Δ elev	Δ−Δfull	BW elev	Proposed Diameter (inches)
do not delete this line																												
												100% AUBURN3-BASE	45.04	45.04	58.04	58.04	61.66	61.66	62.80	62.80			X					
RE*AUBURN3	R18H-48	R18H-47	72	0.013	124.50	123.70	659	0.0012	5.23	95.5	0.0007	0%		45.04		58.04		61.66		62.80	-32.7	OK	NE					
												100% S256TH CORR	16.55	61.58	22.95	80.98	24.38	86.03	24.95	87.75			X					
												100% S SOOS	2.70	64.28	4.60	85.59	4.94	90.98	5.15	92.90			X					
RE*AUBURN3	R18H-47	R18H-45	72	0.013	123.70	123.30	827	0.0005	3.30	60.3	0.0007	0%		64.28		85.59		90.98		92.90	32.6	54	2010					
RE*AUBURN3	R18H-45	R18H-44	72	0.013	123.30	123.20	454	0.0002	2.23	40.7	0.0007	10% aub2-s	0.33	64.61	0.57	86.15	0.60	91.58	0.61	93.51	52.9	66	2010					
RE*AUBURN3	R18H-44	R18H-43	72	0.013	123.20	122.90	592	0.0005	3.38	61.7	0.0007	0%		64.61		86.15		91.58		93.51	31.8	54	2010					
RE*AUBURN3	R18H-43	R18H-42	72	0.013	122.90	122.40	575	0.0009	4.43	80.8	0.0007	0%		64.61		86.15		91.58		93.51	12.7	39	2020					
	Section*		72	0.013		2.10	3107	0.0007		71.2	0.0007	0%		64.61		86.15		91.58		93.51	22.3	48	2020					48
RE*AUBURN2	R18H-42	R18H-41	72	0.013	122.40	122.00	575	0.0007	3.96	72.3	0.0007	68% aub2-s	2.22	66.83	3.85	90.00	4.09	95.67	4.18	97.70	25.4	51	2020					
RE*AUBURN2	R18H-41	R18H-40	72	0.013	122.00	121.60	575	0.0007	3.96	72.3	0.0007	0%		66.83		90.00		95.67		97.70	25.4	51	2020					
RE*AUBURN2	R18H-40	R18H-39	72	0.013	121.60	121.10	518	0.0010	4.67	85.1	0.0007	0%		66.83		90.00		95.67		97.70	12.6	39	2020					
RE*AUBURN2	R18H-39	R18H-38	72	0.013	121.10	120.80	570	0.0005	3.45	62.9	0.0007	0%		66.83		90.00		95.67		97.70	34.8	57	2010					
RE*AUBURN2	R18H-38	R18H-37	72	0.013	120.80	120.20	610	0.0010	4.71	85.9	0.0007	22% aub2-s	0.72	67.55	1.24	91.25	1.32	97.00	1.35	99.05	13.1	39	2020					
RE*AUBURN2*	R18H-37*	R18H-36	72	0.013	120.20	119.51	610	0.0011	5.05	92.1	0.0007	0%		67.55		91.25		97.00		99.05	6.9	30	2030					
RE*AUBURN2*	R18H-36*	R18H-35	72	0.013	119.51	119.56	155	-0.0003			0.0007	0%		67.55		91.25		97.00		99.05	99.0	81	2010	0.2	0.0	-0.3	-0.3	ignore
	Section*		72	0.013		2.84	3613	0.0008		76.8	0.0008	0%		67.55		91.25		97.00		99.05	22.2	48	2020					48
RE*AUBURN2 SIPHON	R18H-35*	R18H-34	54	0.013	119.56	118.40	200	0.0058	64%	96.9		0%		12.81		36.50		42.25		44.31	-52.6		NE					
RE*AUBURN2 SIPHON	R18H-35*	R18H-34	42	0.013	119.56	118.40	200	0.0058	33%	49.6		0%		49.57		49.57		49.57		49.57			NE					
RE*AUBURN2 SIPHON	R18H-35*	R18H-34	18	0.013	119.56	118.40	200	0.0058	3%	5.2		0%		5.17		5.17		5.17		5.17			NE					
	Section*		64	0.013	119.56	118.40	200					0%		67.55		91.25		97.00		99.05	99.0	OK	NE	ok				OK
RE*AUBURN2	R18H-34	R18H-33	72	0.013	118.40	118.30	186	0.0005	3.48	63.5	0.0008	70% aub2-n	1.43	68.99	1.54	92.78	1.64	98.63	1.67	100.72	37.2	57	2010					
RE*AUBURN2	R18H-33	R18H-32	72	0.013	118.30	117.90	535	0.0007	4.11	74.9	0.0008	0%		68.99		92.78		98.63		100.72	25.8	48	2020					
RE*AUBURN2	R18H-32	R18H-31	72	0.013	117.90	117.50	517	0.0008	4.18	76.2	0.0008	0%		68.99		92.78		98.63		100.72	24.5	48	2020					
RE*AUBURN2	R18H-31	R18H-30	72	0.013	117.50	117.10	518	0.0008	4.17	76.1	0.0008	0%		68.99		92.78		98.63		100.72	24.6	48	2020					
RE*AUBURN2	R18H-30	R18H-29	72	0.013	117.10	116.40	517	0.0014	5.53	100.8	0.0008	0%		68.99		92.78		98.63		100.72	-0.1	OK	NE					
RE*AUBURN2	R18H-29	R18H-28	72	0.013	116.40	115.90	517	0.0010	4.67	85.2	0.0008	0%		68.99		92.78		98.63		100.72	15.5	42	2020					
RE*AUBURN2 @SR516	R18H-28	R18H-27	72	0.013	115.90	116.10	220	-0.0009			0.0008	0%		68.99		92.78		98.63		100.72	100.7	81	2010					
RE*AUBURN2 @SR516	R18H-27	R18H-26	72	0.013	116.10	115.90	179	0.0011	5.02	91.6	0.0008	30% aub2-n	0.61	69.60	0.66	93.44	0.70	99.33	0.72	101.43	9.9	36	2020					
RE*AUBURN2	R18H-26	R18H-25	72	0.013	115.90	115.70	416	0.0005	3.29	60.1	0.0008	0%		69.60		93.44		99.33		101.43	41.4	60	2010					
RE*AUBURN2	R18H-25	R18H-24	72	0.013	115.70	114.40	736	0.0018	6.31	115.1	0.0008	0%		69.60		93.44		99.33		101.43	-13.7	OK	NE					
RE*AUBURN2	R18H-24	R18H-23	72	0.013	114.40	114.70	116	-0.0026			0.0008	0%		69.60		93.44		99.33		101.43	101.4	81	2010					
RE*AUBURN2	R18H-23	R18H-22	72	0.013	114.70	114.50	577	0.0003	2.80	51.0	0.0008	0%		69.60		93.44		99.33		101.43	50.4	63	2010					
	Section		72	0.013		3.90	5034	0.0008		76.3	0.0008	0%		69.60		93.44		99.33		101.43	25.2	48	2020					48
RE*AUBURN1	R18H-22	R18H-21A	72	0.013	114.50	114.20	410	0.0007	4.06	74.1	0.0008	0%		69.60		93.44		99.33		101.43	27.3	51	2020					
RE*AUBURN1	R18H-21A	R18H-21	72	0.013	114.20	113.90	410	0.0007	4.06	74.1	0.0008	0%		69.60		93.44		99.33		101.43	27.3	51	2020					
RE*AUBURN1	R18H-21	R18H-19	72	0.013	113.90	113.60	492	0.0006	3.71	67.7	0.0008	0%		69.60		93.44		99.33		101.43	33.8	54	2010					
RE*AUBURN1 @SR 167	R18H-19	R18H-18	72	0.013	113.60	113.20	260	0.0015	5.89	107.5	0.0008	0%		69.60		93.44		99.33		101.43	-6.0	OK	NE					
RE*AUBURN1	R18H-18	R18H-17	72	0.013	113.20	112.90	260	0.0012	5.10	93.1	0.0008	0%		69.60		93.44		99.33		101.43	8.4	33	2020					
RE*AUBURN1	R18H-17	R18H-16	72	0.013	112.90	112.50	468	0.0009	4.39	80.1	0.0008	0%		69.60		93.44		99.33		101.43	21.3	45	2020					
RE*AUBURN1	R18H-16	R18H-15	72	0.013	112.50	112.20	413	0.0007	4.05	73.8	0.0008	0%		69.60		93.44		99.33		101.43	27.6	51	2020					
RE*AUBURN1	R18H-15	R18H-14	72	0.013	112.20	111.90	546	0.0005	3.52	64.2	0.0008	25% xval-x	0.24	69.84	0.25	93.69	0.26	99.60	0.27	101.70	37.5	57	2010					
RE*AUBURN1	R18H-14	R18H-13	72	0.013	111.90	111.50	540	0.0007	4.09	74.6	0.0008	0%		69.84		93.69		99.60		101.70	27.1	51	2020					
RE*AUBURN1	R18H-13	R18H-12	72	0.013	111.50	111.00	530	0.0009	4.61	84.1	0.0008	0%		69.84		93.69		99.60		101.70	17.5	42	2020					
RE*AUBURN1	R18H-12	R18H-11	72	0.013	111.00	110.50	655	0.0008	4.15	75.7	0.0008	0%		69.84		93.69		99.60		101.70	26.0	48	2020					
RE*AUBURN1	R18H-11	R18H-10	72	0.013	110.50	110.00	640	0.0008	4.20	76.6	0.0008	0%		69.84		93.69		99.60		101.70	25.1	48	2020					
RE*AUBURN1	R18H-10	R18H-09	72	0.013	110.00	109.60	398	0.0010	4.76	86.9	0.0008	0%		69.84		93.69		99.60		101.70	14.8	39	2020					
RE*AUBURN1	R18H-09	R18H-08	72	0.013	109.60	109.40	112	0.0018	6.35	115.8	0.0008	100% xval-s	0.34	70.17	0.36	94.05	0.38	99.97	0.38	102.08	-13.7	OK	NE					
RE*AUBURN1	R18H-08	R18H-07	72	0.013	109.40	109.10	629	0.0005	3.28	59.8	0.0008	0%		70.17		94.05		99.97		102.08	42.2	60	2010					
RE*AUBURN1	R18H-07	R18H-06	72	0.013	109.10	108.60	629	0.0008	4.23	77.2	0.0008	0%		70.17		94.05		99.97		102.08	24.8	48	2020					

Task 250 Report:
KENT PLANNING ZONE - PARALLEL PIPE ALTERNATIVE
20% I/I reduction effective in 2000

FACILITY	UP-STREAM MH #	DOWN-STREAM MH #	DIA (IN)	Manning n	UP-STREAM INV ELEV	DOWN-STREAM INV ELEV	LENGTH (FT.)	SLOPE (FT/FT)	Vfull (FPS)	Cap. (MGD)	Herrera New Slope	Modification Origin of Flow (%)	2010 Design Flow 2010 Inflow (MGD)	2010 Design Flow Total (MGD)	2020 Design Flow 2020Inflow (MGD)	2020 Design Flow Total (MGD)	2030 Design Flow 2030 Inflow (MGD)	2030 Design Flow Total (MGD)	2050 Design Flow 2050 Inflow (MGD)	2050 Design Flow Total (MGD)	Excess (MGD)	2050 Parallel Pipe (in.)	Decade Exceeded	Surcharge: any negative value in "BW elev" Δ elev FULL pipe	Δ elev	Δ−Δfull	BW elev	Proposed Diameter (inches)
RE*AUBURN1	R18H-06	R18H-05	72	0.013	108.60	108.00	534	0.0011	5.03	91.8	0.0008	0%		70.17		94.05		99.97		102.08	10.2	36	2020					
RE*AUBURN1	R18H-05	R18H-04	72	0.013	108.00	107.50	565	0.0009	4.47	81.5	0.0008	0%		70.17		94.05		99.97		102.08	20.6	45	2020					
RE*AUBURN1	R18H-04	R18H-03	72	0.013	107.50	107.20	494	0.0006	3.70	67.5	0.0008	0%		70.17		94.05		99.97		102.08	34.6	54	2010					
RE*AUBURN1	R18H-03	R18H-02	72	0.013	107.20	106.80	520	0.0008	4.17	76.0	0.0008	0%		70.17		94.05		99.97		102.08	26.1	48	2020					
RE*AUBURN1	R18H-02	R18H-01	72	0.013	106.80	106.40	520	0.0008	4.17	76.0	0.0008	0%		70.17		94.05		99.97		102.08	26.1	48	2020					
	Section		72	0.013		8.10	10025	0.0008		77.9	0.0008	0%		70.17		94.05		99.97		102.08	24.2	48	2020					48
RE*AUBURN1	R18H-01	R18G-01A	60	0.013	106.40	105.90	36	0.0139	15.67	198.6	0.0026	25% xval-x	**0.24**	70.41	**0.25**	94.30	**0.26**	100.24	**0.27**	102.35	-96.2	OK	NE					
RE*KENTX	R18G-01A	R18G-01	72	0.013	104.00	103.80	635	0.0003	2.67	48.6	0.0026	-65% AUBURN1-SPLIT	**-45.77**	24.64	**-61.30**	33.01	**-65.15**	35.08	**-66.52**	35.82	-12.8	OK	NE					
RE*KENTX	R18G-01	52	72	0.013	103.80	103.70	353	0.0003	2.53	46.1	0.0026	0%		24.64		33.01		35.08		35.82	-10.3	OK	NE					
	Section		72	0.013		2.70	1024	0.0026		140.7	0.0026	0%		24.64		33.01		35.08		35.82	-104.9	OK	NE					OK
TO ULID1/5#52																												

Task 250 Report:
KENT PLANNING ZONE - PARALLEL PIPE ALTERNATIVE
20% I/I reduction effective in 2000

FACILITY	UP-STREAM MH #	DOWN-STREAM MH #	DIA (IN)	Manning n	UP-STREAM INV ELEV	DOWN-STREAM INV ELEV	LENGTH (FT.)	SLOPE (FT/FT)	Vfull (FPS)	Cap. (MGD)	Herrera New Slope	Modification Origin of Flow (%)	2010 Design Flow 2010 Inflow (MGD)	2010 Design Flow Total (MGD)	2020 Design Flow 2020Inflow (MGD)	2020 Design Flow Total (MGD)	2030 Design Flow 2030 Inflow (MGD)	2030 Design Flow Total (MGD)	2050 Design Flow 2050 Inflow (MGD)	2050 Design Flow Total (MGD)	Excess (MGD)	2050 Parallel Pipe (in.)	Decade Exceeded	Surcharge: any negative value in "BW elev" Δ elev FULL pipe	Δ elev	Δ−Δfull	BW elev	Proposed Diameter (inches)
do not delete this line												0%																
RE*WHILL	15	14	24	0.013	155.30	153.30	221	0.0090	6.87	13.9	0.0061	100% whill-x	5.09	5.09	6.21	6.21	6.60	6.60	6.71	6.71	-7.2	OK	NE					
RE*WHILL	14	13	24	0.013	153.30	146.20	249	0.0285	12.19	24.7	0.0061	0%		5.09		6.21		6.60		6.71	-18.0	OK	NE					
RE*WHILL	13	12	24	0.013	146.20	145.40	286	0.0028	3.82	7.7	0.0061	0%		5.09		6.21		6.60		6.71	-1.0	OK	NE	0.6	0.8	0.2	-0.1	
RE*WHILL	12	11	24	0.013	145.40	144.60	514	0.0016	2.85	5.8	0.0061	0%		5.09		6.21		6.60		6.71	0.9	12	2020	1.1	0.8	-0.3	-0.3	ignore
RE*WHILL	11	10	24	0.013	144.60	144.40	95	0.0021	3.31	6.7	0.0061	0%		5.09		6.21		6.60		6.71	0.0	OK	NE					
RE*WHILL	10	09	24	0.013	144.40	143.50	222	0.0041	4.60	9.3	0.0061	0%		5.09		6.21		6.60		6.71	-2.6	OK	NE					
RE*WHILL	09	08	24	0.013	143.50	142.30	305	0.0039	4.53	9.2	0.0061	0%		5.09		6.21		6.60		6.71	-2.5	OK	NE					
RE*WHILL	08	07	24	0.013	142.30	140.00	344	0.0067	5.90	12.0	0.0061	0%		5.09		6.21		6.60		6.71	-5.3	OK	NE					
RE*WHILL	07	06A	24	0.013	140.00	131.20	500	0.0176	9.58	19.4	0.0061	0%		5.09		6.21		6.60		6.71	-12.7	OK	NE					
RE*WHILL	06A*	06B	24	0.013	131.20	131.10	15	0.0067	5.90	11.9	0.0061	0%		5.09		6.21		6.60		6.71	-5.2	OK	NE	0.0	0.1	0.1	-0.1	
RE*WHILL	06B*	06	24	0.013	131.10	130.40	335	0.0021	3.30	6.7	0.0061	0%		5.09		6.21		6.60		6.71	0.0	3	2050	0.7	0.7	0.0	-0.1	ignore
RE*WHILL	06	05	24	0.013	130.40	129.70	350	0.0020	3.23	6.5	0.0061	0%		5.09		6.21		6.60		6.71	0.2	6	2030	0.7	0.7	0.0	-0.1	ignore
RE*WHILL	05	04	24	0.013	129.70	128.70	500	0.0020	3.23	6.5	0.0061	0%		5.09		6.21		6.60		6.71	0.2	6	2030	1.0	1.0	0.0	-0.1	ignore
RE*WHILL	04	03	24	0.013	128.70	127.90	410	0.0020	3.19	6.5	0.0061	0%		5.09		6.21		6.60		6.71	0.2	6	2030	0.9	0.8	-0.1	-0.1	ignore
RE*WHILL	03	02	24	0.013	128.90	127.00	413	0.0046	4.90	9.9	0.0061	0%		5.09		6.21		6.60		6.71	-3.2	OK	NE	0.9	1.9	1.0	0.7	
RE*WHILL	02	01A	24	0.013	127.00	126.50	240	0.0021	3.29	6.7	0.0061	50% ulid4-x	0.97	6.05	1.11	7.32	1.17	7.77	1.19	7.90	1.2	12	2020	0.7	0.5	-0.2	-0.4	ignore
RE*WHILL	01A	01	24	0.013	126.50	126.40	96	0.0010	2.33	4.7	0.0061	0%		6.05		7.32		7.77		7.90	3.2	15	2010	0.3	0.1	-0.2	-0.2	ignore
RE*WHILL	01	S-31A	24	0.013	126.40	125.70	40	0.0175	9.55	19.4	0.0061	0%		6.05		7.32		7.77		7.90	-11.5	OK	NE					
RE*WHILL	S-31A	S-31B	24	0.013	125.70	125.50	294	0.0007	1.88	3.8	0.0061	0%		6.05		7.32		7.77		7.90	4.1	18	2010	0.9	0.2	-0.7	-0.7	ignore
	Section*		24	0.013		29.80	5429	0.0055		10.8	0.0055	0%		6.05		7.32		7.77		7.90	-2.9	OK	NE					OK
RE*WHILL	S-31B	S-31	24	0.013	125.50	122.30	14	0.2286	34.52	70.0	0.0061	0%		6.05		7.32		7.77		7.90	-62.1	OK	NE					
RE*ULID1/4	S-31	S-30	24	0.013	122.30	121.50	448	0.0018	3.05	6.2	0.0015	0%		6.05		7.32		7.77		7.90	1.7	18	2020					
RE*ULID1/4	S-30	S-29	24	0.013	121.50	120.00	454	0.0033	4.15	8.4	0.0015	5% ulid4-x	0.10	6.15	0.11	7.43	0.12	7.89	0.12	8.02	-0.4	OK	NE					
RE*ULID1/4	S-29	S-28	24	0.013	120.00	119.90	443	0.0002	1.09	2.2	0.0015	0%		6.15		7.43		7.89		8.02	5.8	27	2010					
RE*ULID1/4	S-28	S-27	24	0.013	119.90	119.10	446	0.0018	3.06	6.2	0.0015	30% ulid4-x	0.58	6.73	0.66	8.09	0.70	8.59	0.71	8.73	2.5	18	2010					
RE*ULID1/4	S-27	S-26	24	0.013	119.10	118.10	463	0.0022	3.35	6.8	0.0015	0%		6.73		8.09		8.59		8.73	1.9	18	2020					
RE*ULID1/4	S-26	S-25	24	0.013	118.10	117.30	405	0.0020	3.21	6.5	0.0015	0%		6.73		8.09		8.59		8.73	2.2	18	2010					
RE*ULID1/4	S-25	S-24	24	0.013	117.30	116.70	285	0.0021	3.31	6.7	0.0015	0%		6.73		8.09		8.59		8.73	2.0	18	2010					
RE*ULID1/4	S-24	S-23	24	0.013	116.70	115.90	353	0.0023	3.44	7.0	0.0015	0%		6.73		8.09		8.59		8.73	1.8	18	2020					
	Section		24	0.013		6.40	3297	0.0019		6.4	0.0019	0%		6.73		8.09		8.59		8.73	2.3	18	2010					18
RE*ULID1/4	S-23	S-22	30	0.013	115.90	115.30	348	0.0017	3.48	11.0	0.0015	15% ulid4-x	0.29	7.02	0.33	8.42	0.35	8.94	0.36	9.09	-1.9	OK	NE					
RE*ULID1/4	S-22	S-20	30	0.013	115.30	115.00	409	0.0007	2.27	7.2	0.0015	0%		7.02		8.42		8.94		9.09	1.9	18	2020					
RE*ULID1/4	S-20	S-19	30	0.013	115.00	114.70	320	0.0009	2.56	8.1	0.0015	0%		7.02		8.42		8.94		9.09	1.0	15	2020					
RE*ULID1/4	S-19	S-18	30	0.013	114.70	114.50	201	0.0010	2.64	8.4	0.0015	20% 250s-x	0.55	7.56	0.66	9.08	0.70	9.64	0.71	9.79	1.4	15	2020					
RE*ULID1/4	S-18	S-17	30	0.013	114.50	114.20	185	0.0016	3.37	10.7	0.0015	0%		7.56		9.08		9.64		9.79	-0.9	OK	NE					
	Section		30	0.013		1.70	1463	0.0012		9.0	0.0012	0%		7.56		9.08		9.64		9.79	0.7	12	2020					12
RE*ULID250	S-17	S-16	30	0.013	114.20	114.00	290	0.0007	2.20	7.0	0.0015	0%		7.56		9.08		9.64		9.79	2.8	21	2010					
RE*ULID250	S-16	S-15A	30	0.013	114.00	113.60	500	0.0008	2.37	7.5	0.0015	0%		7.56		9.08		9.64		9.79	2.3	18	2010					
RE*ULID250	S-15	S-14	30	0.013	113.60	113.10	502	0.0010	2.64	8.4	0.0015	0%		7.56		9.08		9.64		9.79	1.4	15	2020					
RE*ULID250	S-14	S-13	30	0.013	113.10	112.60	500	0.0010	2.65	8.4	0.0015	0%		7.56		9.08		9.64		9.79	1.4	15	2020					
RE*ULID250	S-13	S-12	30	0.013	112.60	112.20	500	0.0008	2.37	7.5	0.0015	0%		7.56		9.08		9.64		9.79	2.3	18	2010					
RE*ULID250	S-12	S-11	30	0.013	112.20	111.40	324	0.0025	4.16	13.2	0.0015	0%		7.56		9.08		9.64		9.79	-3.4	OK	NE					
RE*ULID250	S-11	S-10	30	0.013	111.40	111.30	440	0.0002	1.26	4.0	0.0015	0%		7.56		9.08		9.64		9.79	5.8	27	2010					
	Section		30	0.013		2.90	3056	0.0009		8.2	0.0015	0%		7.56		9.08		9.64		9.79	1.6	15	2020					15
RE*ULID250	S-10	S-09	36	0.013	111.30	111.10	445	0.0004	2.01	9.1	0.0015	0%		7.56		9.08		9.64		9.79	0.6	12	2030					
RE*ULID250	S-09	S-08	36	0.013	111.10	110.90	446	0.0004	2.00	9.1	0.0015	0%		7.56		9.08		9.64		9.79	0.7	12	2030					
RE*ULID250	S-08	S-07	36	0.013	110.90	110.80	350	0.0003	1.60	7.3	0.0015	0%		7.56		9.08		9.64		9.79	2.5	18	2010					
RE*ULID250	S-07	S-06	36	0.013	110.80	110.50	497	0.0006	2.32	10.6	0.0015	0%		7.56		9.08		9.64		9.79	-0.8	OK	NE					
	Section*		36	0.013		0.80	1738	0.0005	2.03	9.3	0.0015	0%		7.56		9.08		9.64		9.79	0.5	12	2030					12
RE*ULID250	S-06	S-05	36	0.013	110.50	110.20	305	0.0010	2.97	13.5	0.0015	0%		7.56		9.08		9.64		9.79	-3.7	OK	NE	0.2	0.3	0.1	0.1	
RE*ULID250	S-05	S-04A	36	0.013	110.20	110.10	255	0.0004	1.87	8.5	0.0015	0%		7.56		9.08		9.64		9.79	1.3	15	2020	0.1	0.1	0.0	0.0	ignore
RE*ULID250	S-04A	S-03	36	0.013	110.10	109.60	430	0.0012	3.23	14.7	0.0015	80% 250s-x	2.20	9.76	2.65	11.73	2.80	12.44	2.83	12.62	-2.1	OK	NE					
RE*ULID250	S-03	S-02	36	0.013	109.60	109.00	432	0.0014	3.53	16.1	0.0015	0%		9.76		11.73		12.44		12.62	-3.5	OK	NE					
RE*ULID250	S-02	S-01	36	0.013	109.00	108.40	455	0.0013	3.44	15.7	0.0015	0%		9.76		11.73		12.44		12.62	-3.0	OK	NE					
RE*ULID250	S-01	N-01	36	0.013	108.40	107.80	503	0.0012	3.27	14.9	0.0015	0%		9.76		11.73		12.44		12.62	-2.3	OK	NE					
RE*ULID250	N-01	N-02	36	0.013	107.80	105.90	525	0.0036	5.69	26.0	0.0015	0%		9.76		11.73		12.44		12.62	-13.3	OK	NE					
	Section*		36	0.013		4.60	2905	0.0016		17.2	0.0015	0%		9.76		11.73		12.44		12.62	-4.5	OK	NE					OK
TO ULID 250 #N-02																												

KENT PLANNING ZONE
TASK 250 PARALLEL ALTERNATIVE
20% I/I reduction effective in 2000

Task 250 Report:
KENT PLANNING ZONE - PARALLEL PIPE ALTERNATIVE
20% I/I reduction effective in 2000

FACILITY	UP-STREAM MH #	DOWN-STREAM MH #	DIA (IN)	Manning n	UP-STREAM INV ELEV	DOWN-STREAM INV ELEV	LENGTH (FT.)	SLOPE (FT/FT)	Vfull (FPS)	Cap. (MGD)	Herrera New Slope	Modification Origin of Flow (%)	2010 Design Flow 2010 Inflow (MGD)	2010 Design Flow Total (MGD)	2020 Design Flow 2020Inflow (MGD)	2020 Design Flow Total (MGD)	2030 Design Flow 2030 Inflow (MGD)	2030 Design Flow Total (MGD)	2050 Design Flow 2050 Inflow (MGD)	2050 Design Flow Total (MGD)	Excess (MGD)	2050 Parallel Pipe (in.)	Decade Exceeded	Surcharge: any negative value in "BW elev" Δ elev FULL pipe	Δ elev	Δ−Δfull	BW elev	Proposed Diameter (inches)
do not delete this line												0%											X					
RE*ULID250	N-06G	N-06F	15	0.013	113.70	112.50	151	0.0079	4.70	3.7	0.0017	80% 250n-x	2.80	2.80	4.14	4.14	4.37	4.37	4.39	4.39	0.7	12	2020	1.7	1.2	-0.5	-0.5	ignore
RE*ULID250	N-06F	N-06E	27	0.013	112.50	110.70	455	0.0040	4.91	12.6	0.0017	0%		2.80		4.14		4.37		4.39	-8.2	OK	NE					
RE*ULID250	N-06E	N-06D	27	0.013	110.70	108.40	451	0.0051	5.58	14.3	0.0017	10% 250n-x	0.35	3.15	0.52	4.66	0.55	4.92	0.55	4.94	-9.4	OK	NE					
Section*			27	0.013		5.30	1057	0.0050		14.2	0.0050	0%		3.15		4.66		4.92		4.94	-9.2	OK	NE					OK
RE*ULID250	N-06D	N-06C	36	0.013	108.40	108.20	387	0.0005	2.15	9.8	0.0017	0%		3.15		4.66		4.92		4.94	-4.9	OK	NE					
RE*ULID250	N-06C	N-06B	36	0.013	108.20	108.10	282	0.0004	1.78	8.1	0.0017	0%		3.15		4.66		4.92		4.94	-3.2	OK	NE					
RE*ULID250	N-06B	N-06A	36	0.013	108.10	107.90	327	0.0006	2.34	10.7	0.0017	0%		3.15		4.66		4.92		4.94	-5.7	OK	NE					
RE*ULID250	N-06A	N-06	36	0.013	107.90	107.80	422	0.0002	1.46	6.6	0.0017	0%		3.15		4.66		4.92		4.94	-1.7	OK	NE					
RE*ULID250	N-06	N-05	36	0.013	107.80	107.70	180	0.0006	2.23	10.2	0.0017	0%		3.15		4.66		4.92		4.94	-5.2	OK	NE					
RE*ULID250	N-05	N-04	36	0.013	107.70	107.40	423	0.0007	2.52	11.5	0.0017	10% 250n-x	0.35	3.50	0.52	5.17	0.55	5.47	0.55	5.49	-6.0	OK	NE					
RE*ULID250	N-04	N-03	36	0.013	107.40	107.20	441	0.0005	2.01	9.2	0.0017	0%		3.50		5.17		5.47		5.49	-3.7	OK	NE					
RE*ULID250	N-03	N-02A	36	0.013	107.20	107.10	287	0.0003	1.77	8.1	0.0017	0%		3.50		5.17		5.47		5.49	-2.6	OK	NE					
Section*			36	0.013		1.30	2749	0.0005	2.06	9.4	0.0005	0%		3.50		5.17		5.47		5.49	-3.9	OK	NE					OK
RE*ULID250	N-02A	N-02	36	0.013	107.10	105.90	135	0.0089		40.7	0.0089	100% ULID250S	9.76	13.27	11.73	16.90	12.44	17.91	12.62	18.11	-22.6	OK	NE					
Section*			36	0.013		1.20	135	0.0089	8.92	40.7	0.0089	0%		13.27		16.90		17.91		18.11	-22.6	OK	NE					OK
RE*KENTX	R18G-07	R18G-06	54	0.013	106.00	105.60	625	0.0006	3.14	32.2	0.0007	25% xval-x	0.24	13.50	0.25	17.15	0.26	18.17	0.27	18.38	-13.8	OK	NE					
RE*KENTX	R18G-06	R18G-05	54	0.013	105.60	105.20	618	0.0006	3.15	32.4	0.0007	0%		13.50		17.15		18.17		18.38	-14.0	OK	NE					
RE*KENTX	R18G-05	R18G-04	54	0.013	105.20	105.40	74	-0.0027			0.0007	0%		13.50		17.15		18.17		18.38	18.4	45	2010	0.0	-0.2	-0.2	-0.2	ignore
RE*KENTX	R18G-04	R18G-03	54	0.013	105.40	105.00	619	0.0006	3.15	32.3	0.0007	0%		13.50		17.15		18.17		18.38	-14.0	OK	NE					
RE*KENTX to SI	R18G-03	R18A-57	54	0.013	105.00	104.10	664	0.0014	4.56	46.8	0.0007	0%		13.50		17.15		18.17		18.38	-28.5	OK	NE					
Section*			54	0.013		1.90	2600	0.0007	3.35	34.4	0.0007	0%		13.50		17.15		18.17		18.38	-16.0	OK	NE					OK
TO SOUTH INTERCEPTOR																												

Task 250 Report:
KENT PLANNING ZONE - PARALLEL PIPE ALTERNATIVE
20% I/I reduction effective in 2000

FACILITY	UP-STREAM MH #	DOWN-STREAM MH #	DIA (IN)	Manning n	UP-STREAM INV ELEV	DOWN-STREAM INV ELEV	LENGTH (FT.)	SLOPE (FT/FT)	Vfull (FPS)	Cap. (MGD)	Herrera New Slope	Modification Origin of Flow (%)	2010 Design Flow 2010 Inflow (MGD)	2010 Design Flow Total (MGD)	2020 Design Flow 2020Inflow (MGD)	2020 Design Flow Total (MGD)	2030 Design Flow 2030 Inflow (MGD)	2030 Design Flow Total (MGD)	2050 Design Flow 2050 Inflow (MGD)	2050 Design Flow Total (MGD)	Excess (MGD)	2050 Parallel Pipe (in.)	Decade Exceeded	Surcharge: any negative value in "BW elev" Δ elev FULL pipe	Δ elev	Δ−Δfull	BW elev	Proposed Diameter (inches)
												5% mill-x	0.48	0.48	0.55	0.55	0.59	0.59	0.61	0.61			X					
RE*GARISN	R18-30*	R18-29	24	0.013	378.04	377.67	110	0.0034	4.18	8.5	0.0553	70% gar-x	3.49	3.97	4.21	4.77	4.49	5.08	4.65	5.27	-3.2	OK	NE					
RE*GARISN	R18-29*	R18-28	12	0.013	377.67	347.35	206	0.1472	17.46	8.8	0.0553	0%		3.97		4.77		5.08		5.27	-3.6	OK	NE					
RE*GARISN	R18-28*	R18-27	12	0.013	347.35	326.23	195	0.1083	14.97	7.6	0.0553	0%		3.97		4.77		5.08		5.27	-2.3	OK	NE					
RE*GARISN	R18-27*	R18-26	12	0.013	326.23	302.19	152	0.1580	18.08	9.2	0.0553	0%		3.97		4.77		5.08		5.27	-3.9	OK	NE					
RE*GARISN	R18-26*	R18-25	12	0.013	302.19	276.30	335	0.0773	12.64	6.4	0.0553	0%		3.97		4.77		5.08		5.27	-1.1	OK	NE					
	Section*		12	0.013		101.74	999	0.1019		7.4	0.1019	0%		3.97		4.77		5.08		5.27	-2.1	OK	NE					OK
RE*GARISN	R18-25*	R18-24	18	0.013	275.59	273.89	325	0.0052	4.31	4.9	0.0051	0%		3.97		4.77		5.08		5.27	0.4	9	2030					
RE*GARISN	R18-24*	R18-23	18	0.013	273.89	272.28	330	0.0049	4.16	4.7	0.0051	0%		3.97		4.77		5.08		5.27	0.5	9	2020					
	Section*		18	0.013		3.31	655	0.0051		4.8	0.0051	0%		3.97		4.77		5.08		5.27	0.4	9	2030					9
RE*GARISN	R18-23*	R18-22	12	0.013	272.28	254.65	235	0.0751	12.47	6.3	0.0553	10% gar-x	0.50	4.47	0.60	5.37	0.64	5.72	0.66	5.93	-0.4	OK	NE					
RE*GARISN	R18-22*	R18-21	12	0.013	254.65	223.41	210	0.1488	17.55	8.9	0.0553	0%		4.47		5.37		5.72		5.93	-3.0	OK	NE					
RE*GARISN	R18-21*	R18-20	12	0.013	219.39	202.44	69	0.2459	22.55	11.4	0.0553	0%		4.47		5.37		5.72		5.93	-5.5	OK	NE					
RE*GARISN	R18-20*	R18-19	12	0.013	202.44	190.27	97	0.1250	16.08	8.1	0.0553	0%		4.47		5.37		5.72		5.93	-2.2	OK	NE					
	Section*		12	0.013		82.01	611	0.1342		8.4	0.1342	0%		4.47		5.37		5.72		5.93	-2.5	OK	NE					OK
RE*GARISN	R18-19*	R18-18	15	0.013	190.27	188.11	202	0.0107	5.45	4.3	0.0342	0%		4.47		5.37		5.72		5.93	1.6	9	2010	4.1	2.2	-1.9	-1.9	9
RE*GARISN @ creek	R18-18*	R18-17	15	0.013	188.11	171.18	356	0.0475	11.51	9.1	0.0342	0%		4.47		5.37		5.72		5.93	-3.2	OK	NE					
	Section*		15	0.013		19.09	559	0.0342		7.7	0.0342	0%		4.47		5.37		5.72		5.93	-1.8	OK	NE					OK
RE*GARISN @ creek drop	R18-17*	R18-15	18	0.013	167.15	165.29	386	0.0048	4.14	4.7	0.0061	0%		4.47		5.37		5.72		5.93	1.2	12	2020					
RE*GARISN @ creek	R18-15*	R18-14	18	0.013	165.29	163.34	339	0.0058	4.52	5.2	0.0061	0%		4.47		5.37		5.72		5.93	0.8	9	2020					
RE*GARISN @ creek	R18-14*	R18-13	18	0.013	163.34	162.29	66	0.0159	7.51	8.6	0.0061	20% gar-x	1.00	5.47	1.20	6.57	1.28	7.01	1.33	7.26	-1.3	OK	NE					
	Section*		18	0.013		4.86	791	0.0061		5.3	0.0061	0%		5.47		6.57		7.01		7.26	1.9	15	2010					15
RE*GARISN	R18-13*	R18-12A	24	0.013	161.70	161.47	101	0.0023	3.44	7.0	0.0553	0%		5.47		6.57		7.01		7.26	0.3	6	2030					
RE*GARISN	R18-12A*	R18-12	24	0.013	161.47	161.21	155	0.0017	2.96	6.0	0.0553	0%		5.47		6.57		7.01		7.26	1.3	9	2020					
RE*GARISN	R18-12*	R18-11	24	0.013	161.21	160.79	259	0.0016	2.91	5.9	0.0553	0%		5.47		6.57		7.01		7.26	1.4	9	2020					
	Section*		24	0.013		0.91	515	0.0018		6.2	0.0018	0%		5.47		6.57		7.01		7.26	1.1	15	2020					15
RE*GARISN	R18-11*	R18-10	18	0.013	160.79	130.78	356	0.0842	17.30	19.7	0.0553	0%		5.47		6.57		7.01		7.26	-12.5	OK	NE					
RE*GARISN drop	R18-10*	R18-09	18	0.013	118.98	115.51	260	0.0133	6.88	7.8	0.0553	0%		5.47		6.57		7.01		7.26	-0.6	OK	NE					
	Section*		18	0.013		45.28	617	0.0734		18.4	0.0734	0%		5.47		6.57		7.01		7.26	-11.2	OK	NE					OK
RE*GARISN	R18-09*	R18-08	24	0.013	115.51	115.09	420	0.0010	2.29	4.6	0.0015	34% c5e-x	0.37	5.83	0.41	6.98	0.43	7.44	0.44	7.69	3.1	21	2010					
RE*GARISN	R18-08*	R18-07	24	0.013	115.09	114.54	413	0.0013	2.64	5.3	0.0015	0%		5.83		6.98		7.44		7.69	2.4	18	2010					
RE*GARISN	R18-07*	R18-06	24	0.013	114.54	114.29	94	0.0027	3.72	7.5	0.0015	0%		5.83		6.98		7.44		7.69	0.2	9	2050					
RE*GARISN	R18-06*	R18-04	24	0.013	114.29	114.42	134	-0.0010			0.0015	0%		5.83		6.98		7.44		7.69	7.7	27	2010					
RE*GARISN	R18-04*	R18-03	24	0.013	114.42	113.88	418	0.0013	2.59	5.3	0.0015	0%		5.83		6.98		7.44		7.69	2.4	18	2010					
RE*GARISN	R18-03*	R18-02A	24	0.013	113.84	113.39	350	0.0013	2.59	5.2	0.0015	0%		5.83		6.98		7.44		7.69	2.4	18	2010					
RE*GARISN	R18-02A*	R18-02	24	0.013	113.39	113.29	96	0.0010	2.33	4.7	0.0015	0%		5.83		6.98		7.44		7.69	3.0	21	2010					
RE*GARISN	R18-02*	R18-01	24	0.013	113.29	112.63	365	0.0018	3.07	6.2	0.0015	33% c5e-x	0.35	6.19	0.40	7.38	0.42	7.85	0.42	8.12	1.9	18	2020					
RE*GARISN	R18-01*	R18-57I-A	24	0.013	112.63	112.50	306	0.0004	1.49	3.0	0.0015	0%		6.19		7.38		7.85		8.12	5.1	24	2010					
RE*GARISN	R18-57I-A	57I	24	0.013	112.50	112.40	19	0.0053	5.24	10.6	0.0015	0%		6.19		7.38		7.85		8.12	-2.5	OK	NE					
	Section*		24	0.013		3.11	2614	0.0012		5.0	0.0012	0%		6.19		7.38		7.85		8.12	3.1	21	2010					21
RE*ULID1/5	57I	57H	24	0.013	112.40	112.00	404	0.0010	2.27	4.6	0.0015	0%		6.19		7.38		7.85		8.12	3.5	21	2010					
RE*ULID1/5	57H	57G	24	0.013	112.00	111.50	403	0.0012	2.54	5.2	0.0015	0%		6.19		7.38		7.85		8.12	3.0	21	2010					
RE*ULID1/5	57G	57F	24	0.013	111.50	111.00	351	0.0014	2.72	5.5	0.0015	33% c5e-x	0.35	6.54	0.40	7.77	0.42	8.27	0.42	8.54	3.0	21	2010					
RE*ULID1/5	57F	57E	24	0.013	111.00	110.60	350	0.0011	2.44	4.9	0.0015	0%		6.54		7.77		8.27		8.54	3.6	21	2010					
RE*ULID1/5	57E	57D	24	0.013	110.60	110.00	400	0.0015	2.80	5.7	0.0015	0%		6.54		7.77		8.27		8.54	2.9	21	2010					
RE*ULID1/5	57D	57C	24	0.013	110.00	109.40	400	0.0015	2.80	5.7	0.0015	0%		6.54		7.77		8.27		8.54	2.9	21	2010					
RE*ULID1/5	57C	57B	24	0.013	109.40	109.30	130	0.0008	2.00	4.1	0.0015	0%		6.54		7.77		8.27		8.54	4.5	24	2010					
RE*ULID1/5	57B	57AA	24	0.013	109.30	108.90	217	0.0018	3.10	6.3	0.0015	0%		6.54		7.77		8.27		8.54	2.3	18	2010					
RE*ULID1/5	57AA	57A	24	0.013	108.90	108.50	268	0.0015	2.79	5.7	0.0015	0%		6.54		7.77		8.27		8.54	2.9	21	2010					
RE*ULID1/5	57A	57	24	0.013	108.50	106.40	500	0.0042	4.68	9.5	0.0015	0%		6.54		7.77		8.27		8.54	-0.9	OK	NE					
	Section		24	0.013		6.00	3423	0.0018		6.1	0.0018	0%		6.54		7.77		8.27		8.54	2.4	18	2010					18
TO ULID 1/5.#57																												

Task 250 Report:
KENT PLANNING ZONE - PARALLEL PIPE ALTERNATIVE
20% I/I reduction effective in 2000

FACILITY	UP-STREAM MH #	DOWN-STREAM MH #	DIA (IN)	Manning n	UP-STREAM INV ELEV	DOWN-STREAM INV ELEV	LENGTH (FT.)	SLOPE (FT/FT)	Vfull (FPS)	Cap. (MGD)	Herrera New Slope	Modification Origin of Flow (%)	2010 Design Flow 2010 Inflow (MGD)	2010 Design Flow Total (MGD)	2020 Design Flow 2020Inflow (MGD)	2020 Design Flow Total (MGD)	2030 Design Flow 2030 Inflow (MGD)	2030 Design Flow Total (MGD)	2050 Design Flow 2050 Inflow (MGD)	2050 Design Flow Total (MGD)	Excess (MGD)	2050 Parallel Pipe (in.)	Decade Exceeded	Surcharge: any negative value in "BW elev" Δ elev FULL pipe	Δ elev	Δ−Δfull	BW elev	Proposed Diameter (inches)
do not delete this line												100% mill-e	2.15	2.15	2.80	2.80	3.02	3.02	3.19	3.19			X					
RE*MILL	R18F-37A	R18F-37	27	0.013	444.60	442.00	440	0.0059	6.00	15.4	0.0218	25% mill-x	2.40	4.55	2.77	5.57	2.96	5.98	3.07	6.27	-9.1	OK	NE					
RE*MILL	R18F-37	R18F-36	21	0.013	442.00	434.70	428	0.0171	8.63	13.4	0.0218	0%		4.55		5.57		5.98		6.27	-7.1	OK	NE					
RE*MILL	R18F-36	R18F-35	21	0.013	434.70	428.90	335	0.0173	8.69	13.5	0.0218	0%		4.55		5.57		5.98		6.27	-7.2	OK	NE					
RE*MILL	R18F-35	R18F-34	21	0.013	428.90	423.00	340	0.0174	8.70	13.5	0.0218	0%		4.55		5.57		5.98		6.27	-7.2	OK	NE					
RE*MILL	R18F-34	R18F-33	21	0.013	423.00	417.00	358	0.0168	8.55	13.3	0.0218	0%		4.55		5.57		5.98		6.27	-7.0	OK	NE					
RE*MILL	R18F-33	R18F-32	21	0.013	417.00	411.00	358	0.0168	8.55	13.3	0.0218	0%		4.55		5.57		5.98		6.27	-7.0	OK	NE					
	Section*		21	0.013		33.60	2259	0.0149		12.5	0.0149	0%		4.55		5.57		5.98		6.27	-6.2	OK	NE					OK
RE*MILL	R18F-32	R18F-31	24	0.013	411.00	408.50	408	0.0061	5.65	11.5	0.0218	0%		4.55		5.57		5.98		6.27	-5.2	OK	NE					
RE*MILL	R18F-31	R18F-30	24	0.013	408.50	406.70	307	0.0059	5.53	11.2	0.0218	0%		4.55		5.57		5.98		6.27	-4.9	OK	NE					
RE*MILL	R18F-30	R18F-29	24	0.013	406.70	404.80	320	0.0059	5.56	11.3	0.0218	0%		4.55		5.57		5.98		6.27	-5.0	OK	NE					
	Section		24	0.013		6.20	1035	0.0060		11.3	0.0060	0%		4.55		5.57		5.98		6.27	-5.1	OK	NE					OK
RE*MILL	R18F-29	R18F-28	21	0.013	404.80	400.50	359	0.0120	7.23	11.2	0.0218	12% mill-x	1.15	5.70	1.33	6.89	1.42	7.40	1.47	7.74	-3.5	OK	NE					
RE*MILL	R18F-28	R18F-27A	18	0.013	400.50	391.80	231	0.0377	11.57	13.2	0.0218	0%		5.70		6.89		7.40		7.74	-5.4	OK	NE					
RE*MILL	R18F-27A	R18F-27	18	0.013	391.80	388.20	80	0.0450	12.64	14.4	0.0218	0%		5.70		6.89		7.40		7.74	-6.7	OK	NE					
RE*MILL	R18F-27	R18F-26	18	0.013	388.20	371.10	379	0.0451	12.66	14.4	0.0218	0%		5.70		6.89		7.40		7.74	-6.7	OK	NE					
RE*MILL	R18F-26	R18F-25	18	0.013	371.10	348.40	367	0.0619	14.82	16.9	0.0218	0%		5.70		6.89		7.40		7.74	-9.2	OK	NE					
RE*MILL	R18F-25	R18F-24	18	0.013	348.40	334.30	318	0.0443	12.55	14.3	0.0218	0%		5.70		6.89		7.40		7.74	-6.6	OK	NE					
RE*MILL	R18F-24	R18F-23	18	0.013	334.30	309.00	405	0.0625	14.90	17.0	0.0218	0%		5.70		6.89		7.40		7.74	-9.2	OK	NE					
RE*MILL	R18F-23	R18F-22	18	0.013	309.00	278.20	395	0.0780	16.64	19.0	0.0218	0%		5.70		6.89		7.40		7.74	-11.2	OK	NE					
RE*MILL	R18F-22	R18F-21	18	0.013	278.20	263.00	195	0.0779	16.64	19.0	0.0218	0%		5.70		6.89		7.40		7.74	-11.2	OK	NE					
RE*MILL	R18F-21	R18F-20A	18	0.013	263.00	256.80	165	0.0376	11.56	13.2	0.0218	0%		5.70		6.89		7.40		7.74	-5.4	OK	NE					
RE*MILL	R18F-20A	R18F-20	18	0.013	256.80	252.30	90	0.0500	13.33	15.2	0.0218	0%		5.70		6.89		7.40		7.74	-7.5	OK	NE					
RE*MILL	R18F-20	R18F-19	18	0.013	252.30	238.80	292	0.0462	12.82	14.6	0.0218	0%		5.70		6.89		7.40		7.74	-6.9	OK	NE					
RE*MILL	R18F-19	R18F-18	18	0.013	238.80	216.90	347	0.0631	14.97	17.1	0.0218	0%		5.70		6.89		7.40		7.74	-9.3	OK	NE					
	Section*		18	0.013		187.90	3623	0.0519	13.58	15.5	0.0519	0%		5.70		6.89		7.40		7.74	-7.7	OK	NE					OK
RE*MILL	R18F-18	R18F-17	21	0.013	216.90	213.00	290	0.0134	7.66	11.9	0.0218	0%		5.70		6.89		7.40		7.74	-4.1	OK	NE					
RE*MILL	R18F-17	R18F-16A	18	0.013	213.00	184.00	447	0.0649	15.18	17.3	0.0218	0%		5.70		6.89		7.40		7.74	-9.6	OK	NE					
RE*MILL	R18F-16A	R18F-16	18	0.013	184.00	182.70	14	0.0929	18.16	20.7	0.0218	0%		5.70		6.89		7.40		7.74	-13.0	OK	NE					
RE*MILL	R18F-16	R18F-15	18	0.013	182.70	174.60	118	0.0686	15.62	17.8	0.0218	0%		5.70		6.89		7.40		7.74	-10.1	OK	NE					
	Section		18	0.013		38.40	869	0.0442	12.53	14.3	0.0442	0%		5.70		6.89		7.40		7.74	-6.5	OK	NE					OK
RE*MILL	R18F-15	R18F-14	24	0.013	174.60	172.20	380	0.0063	5.74	11.6	0.0218	0%		5.70		6.89		7.40		7.74	-3.9	OK	NE					
RE*MILL	R18F-14	R18F-13	18	0.013	172.20	168.20	143	0.0280	9.97	11.4	0.0218	0%		5.70		6.89		7.40		7.74	-3.6	OK	NE					
RE*MILL	R18F-13	R18F-12	18	0.013	168.20	164.10	140	0.0293	10.20	11.6	0.0218	0%		5.70		6.89		7.40		7.74	-3.9	OK	NE					
RE*MILL	R18F-12	R18F-11	18	0.013	164.10	154.80	149	0.0624	14.89	17.0	0.0218	0%		5.70		6.89		7.40		7.74	-9.2	OK	NE					
RE*MILL	R18F-11	R18F-10	18	0.013	154.80	136.20	295	0.0631	14.97	17.1	0.0218	0%		5.70		6.89		7.40		7.74	-9.3	OK	NE					
	Section*		18	0.013		38.40	1107	0.0347	11.10	12.7	0.0347	0%		5.70		6.89		7.40		7.74	-4.9	OK	NE					OK
RE*MILL	R18F-10	R18F-09	21	0.013	136.20	126.30	439	0.0226	9.92	15.4	0.0218	0%		5.70		6.89		7.40		7.74	-7.7	OK	NE					
	Section*		21	0.013		9.90	439	0.0226	9.92	15.4	0.0218	0%		5.70		6.89		7.40		7.74	-7.7	OK	NE					OK
RE*MILL	R18F-09	R18F-07	30	0.013	126.30	125.00	465	0.0028	4.43	14.0	0.0218	25% mill-x	2.40	8.10	2.77	9.66	2.96	10.36	3.07	10.81	-3.2	OK	NE					
RE*MILL	R18F-07	R18F-06	30	0.013	125.00	124.40	424	0.0014	3.15	10.0	0.0218	0%		8.10		9.66		10.36		10.81	0.8	9	2030					
RE*MILL	R18F-06	R18F-05	30	0.013	124.40	123.40	483	0.0021	3.81	12.1	0.0218	25% mill-x	2.40	10.49	2.77	12.43	2.96	13.32	3.07	13.89	1.8	12	2020					
RE*MILL	R18F-05	R18F-04	30	0.013	123.40	122.00	547	0.0026	4.24	13.4	0.0218	0%		10.49		12.43		13.32		13.89	0.5	6	2050					
RE*MILL	R18F-04	R18F-03	30	0.013	122.00	120.60	540	0.0026	4.27	13.5	0.0218	0%		10.49		12.43		13.32		13.89	0.4	6	2050					
RE*MILL	R18F-03	R18F-02C	30	0.013	120.60	120.40	93	0.0022	3.88	12.3	0.0218	0%		10.49		12.43		13.32		13.89	1.6	9	2020					
RE*MILL	R18F-02C	R18F-02B	30	0.013	120.40	119.30	515	0.0021	3.87	12.3	0.0218	0%		10.49		12.43		13.32		13.89	1.6	12	2020					
RE*MILL	R18F-02B	R18F-02A	30	0.013	119.30	118.80	182	0.0027	4.39	13.9	0.0218	0%		10.49		12.43		13.32		13.89	0.0	OK	NE					
RE*MILL	R18F-02A	R18F-02	30	0.013	118.80	118.70	67	0.0015	3.24	10.3	0.0218	0%		10.49		12.43		13.32		13.89	3.6	15	2010					
RE*MILL	R18F-02	R18F-01	30	0.013	118.70	117.50	375	0.0032	4.74	15.0	0.0218	0%		10.49		12.43		13.32		13.89	-1.1	OK	NE					
	Section*		30	0.013		8.80	3691	0.0024	4.09	13.0	0.0024	0%		10.49		12.43		13.32		13.89	0.9	12	2030					12

Task 250 Report:
KENT PLANNING ZONE - PARALLEL PIPE ALTERNATIVE
20% I/I reduction effective in 2000

FACILITY	UP-STREAM MH #	DOWN-STREAM MH #	DIA (IN)	Manning n	UP-STREAM INV ELEV	DOWN-STREAM INV ELEV	LENGTH (FT.)	SLOPE (FT/FT)	Vfull (FPS)	Cap. (MGD)	Herrera New Slope	Modification Origin of Flow (%)	2010 Design Flow 2010 Inflow (MGD)	2010 Design Flow Total (MGD)	2020 Design Flow 2020Inflow (MGD)	2020 Design Flow Total (MGD)	2030 Design Flow 2030 Inflow (MGD)	2030 Design Flow Total (MGD)	2050 Design Flow 2050 Inflow (MGD)	2050 Design Flow Total (MGD)	Excess (MGD)	2050 Parallel Pipe (in.)	Decade Exceeded	Surcharge: any negative value in "BW elev" Δ elev FULL pipe	Δ elev	Δ−Δfull	BW elev	Proposed Diameter (inches)
RE*ULID1/5	R18F-01	75	30	0.013	117.50	117.60	43	-0.0023			0.0218	0%		10.49		12.43		13.32		13.89	13.9	21	2010					
RE*ULID1/5	75	74AA	30	0.013	117.60	117.50	11	0.0091	7.99	25.3	0.0218	0%		10.49		12.43		13.32		13.89	-11.4	OK	NE					
RE*ULID1/5	74AA	74	30	0.013	117.50	117.40	109	0.0009	2.54	8.0	0.0218	0%		10.49		12.43		13.32		13.89	5.8	15	2010					
RE*ULID1/5	74	73	30	0.013	117.40	116.80	348	0.0017	3.48	11.0	0.0218	0%		10.49		12.43		13.32		13.89	2.9	12	2020					
RE*ULID1/5	73	72	30	0.013	116.80	116.10	400	0.0018	3.50	11.1	0.0218	0%		10.49		12.43		13.32		13.89	2.8	12	2020					
RE*ULID1/5	72	71	30	0.013	116.10	115.60	315	0.0016	3.34	10.6	0.0218	0%		10.49		12.43		13.32		13.89	3.3	12	2020					
RE*ULID1/5	71	70	30	0.013	115.60	115.20	270	0.0015	3.22	10.2	0.0218	0%		10.49		12.43		13.32		13.89	3.7	15	2010					
RE*ULID1/5	70	69	30	0.013	115.20	114.40	494	0.0016	3.37	10.7	0.0218	0%		10.49		12.43		13.32		13.89	3.2	12	2020					
RE*ULID1/5	69	68	30	0.013	114.40	113.70	485	0.0014	3.18	10.1	0.0218	0%		10.49		12.43		13.32		13.89	3.8	15	2010					
RE*ULID1/5 @SR167	68	67	30	0.013	113.70	113.50	123	0.0016	3.38	10.7	0.0218	0%		10.49		12.43		13.32		13.89	3.2	12	2020					
	Section		30	0.013		4.00	2598	0.0015	3.29	10.4	0.0015	0%		10.49		12.43		13.32		13.89	3.5	21	2010					21
RE*ULID1/5	67	66	27	0.013	113.50	113.00	296	0.0017	3.21	8.2	0.0015	0%		10.49		12.43		13.32		13.89	5.7	27	2010					
RE*ULID1/5	66	65	27	0.013	113.00	112.40	412	0.0015	2.98	7.6	0.0015	25% xval-x	**0.24**	10.73	**0.25**	12.68	**0.26**	13.58	**0.27**	14.15	6.5	27	2010					
RE*ULID1/5	65	64	27	0.013	112.40	111.70	467	0.0015	3.02	7.8	0.0015	0%		10.73		12.68		13.58		14.15	6.4	27	2010					
RE*ULID1/5	64	63	27	0.013	111.70	111.20	258	0.0019	3.44	8.8	0.0015	0%		10.73		12.68		13.58		14.15	5.3	24	2010					
RE*ULID1/5	63	62	27	0.013	111.20	110.50	404	0.0017	3.25	8.3	0.0015	8% mill-x	**0.77**	11.50	**0.89**	13.57	**0.95**	14.52	**0.98**	15.13	6.8	27	2010					
RE*ULID1/5	62	61	27	0.013	110.50	110.00	322	0.0016	3.08	7.9	0.0015	0%		11.50		13.57		14.52		15.13	7.2	27	2010					
	Section		27	0.013		3.50	2159	0.0016		8.1	0.0016	0%		11.50		13.57		14.52		15.13	7.1	27	2010					27
RE*ULID1/5	61	60	30	0.013	110.00	109.20	469	0.0017	3.46	11.0	0.0015	0%		11.50		13.57		14.52		15.13	4.2	24	2010					
RE*ULID1/5	60	59	30	0.013	109.20	108.70	430	0.0012	2.86	9.0	0.0015	0%		11.50		13.57		14.52		15.13	6.1	27	2010					
RE*ULID1/5	59	58	30	0.013	108.70	108.10	504	0.0012	2.89	9.2	0.0015	0%		11.50		13.57		14.52		15.13	6.0	27	2010					
RE*ULID1/5	58	57	30	0.013	108.10	107.60	419	0.0012	2.89	9.2	0.0015	0%		11.50		13.57		14.52		15.13	6.0	27	2010					
	Section		30	0.013		2.40	1822	0.0013		9.6	0.0013	0%		11.50		13.57		14.52		15.13	5.5	27	2010					27
RE*ULID1/5	57	R18-30	42	0.013	106.60	106.40	404	0.0005	2.33	14.5	0.0004	100% ULID1/5 57A	**6.54**	18.04	**7.77**	21.34	**8.27**	22.80	**8.54**	23.68	9.2	39	2010					
RE*ULID1/5	56	55	42	0.013	106.40	106.30	393	0.0003	1.67	10.4	0.0004	0%		18.04		21.34		22.80		23.68	13.3	42	2010					
RE*ULID1/5	55	54	42	0.013	106.30	106.10	432	0.0005	2.26	14.0	0.0004	0%		18.04		21.34		22.80		23.68	9.7	39	2010					
RE*ULID1/5	54	53	42	0.013	106.10	105.90	442	0.0005	2.23	13.8	0.0004	0%		18.04		21.34		22.80		23.68	9.8	39	2010					
	Section*		42	0.013		0.70	1671	0.0004	2.15	13.3	0.0004	0%		18.04		21.34		22.80		23.68	10.4	39	2010					39
RE*ULID1/5	53	52	42	0.013	105.90	103.70	436	0.0050	7.45	46.2	0.0050	0%		18.04		21.34		22.80		23.68	-22.6	OK	NE					
	Section*		42	0.013		2.20	436	0.0050		46.2	0.0050	0%		18.04		21.34		22.80		23.68	-22.6	OK	NE					OK
RE*ULID1/2	52	51	72	0.012	103.70	103.60	353	0.0003	2.74	50.0	0.0050	65% AUBURN1-SPLIT	**45.77**	63.80	**61.30**	82.63	**65.15**	87.95	**66.52**	90.20	40.2	39	2010					N/A
												100% KENTXVAL TO SI	**13.50**	13.50	**17.15**	17.15	**18.17**	18.17	**18.38**	18.38			2010					
												35% AUBURN1-SPLIT	**24.64**	24.64	**33.01**	33.01	**35.08**	35.08	**35.82**	35.82			2010					
*RWSP pipe or section data revised.														101.95				141.21	144.4	144.40 check								

KENT PLANNING ZONE
TASK 250 PARALLEL ALTERNATIVE
20% I/I reduction effective in 2000

APPENDIX 250-I

KENT PLANNING ZONE REROUTING ALTERNATIVE FLOW ROUTING WITH 20% I/I REDUCTION EFFECTIVE IN 2000

Task 250 Report:
KENT PLANNING ZONE - REROUTING ALTERNATIVE
20% I/I reduction effective in 2000

FACILITY	UP-STREAM MH #	DOWN-STREAM MH #	DIA. (IN)	Manning n	UP-STREAM INV ELEV	DOWN-STREAM INV ELEV	LENGTH (FT.)	SLOPE (FT/FT)	Vfull (FPS)	Cap. (MGD)	Herrera New Slope	Modification Origin of Flow Percent	2010 Design Flow Inflow (MGD)	2010 Design Flow Total (MGD)	2020 Design Flow Inflow (MGD)	2020 Design Flow Total (MGD)	2030 Design Flow Inflow (MGD)	2030 Design Flow Total (MGD)	2050 Design Flow Inflow (MGD)	2050 Design Flow Total (MGD)	Excess (+) (MGD)	2050 Parallel Pipe (in.)	Decade Exceeded	Surcharge: any negative value in "BW elev" Δ elev FULL pipe	Δ elev	Δ−Δfull	BW elev (ft)	Proposed Diameter (inches)
do not delete this line																												
												45% ulid4-x	0.87	0.87	1.00	1.00	1.05	1.05	1.07	1.07			X					
MEEKER TRUNK from WHILL 6B	6B	MT2	24	0.013	131.10	125.58	2400	0.0023	3.46	7.0	0.0023	0% whill-x		0.87		1.00		1.05		1.07	-5.95	OK	NE					
MEEKER TRUNK to SW Trunk	MT2	SWK3	24	0.013	125.58	120.06	2400	0.0023	3.46	7.0	0.0023	0%		0.87		1.00		1.05		1.07	-5.95	OK	NE					
Section*			24	0.013		11.04	4800	0.0023	3.46	7.0	0.0023	0%		0.87		1.00		1.05		1.07	-5.95	OK	NE					24
TO SOUTHWEST TRUNK												0%																
do not delete this line												0%																
JAMES TRUNK from MILL#6	R18F-06	JT2	36	0.013	123.90	118.14	3000	0.0019	4.15	18.9	0.0019	100% MILL #6	7.81	7.81	9.33	9.33	10.00	10.00	10.44	10.44	-8.46	OK	NE					
JAMES TRUNK to AUB1#19	JT2	AUB1#19	36	0.013	118.14	116.60	800	0.0019	4.15	18.9	0.0019	25% xval-x	0.24	8.04	0.25	9.58	0.26	10.27	0.27	10.71	-8.20	OK	NE					
Section*			36	0.013		7.30	3800	0.0019	4.15	18.9	0.0019	0%		8.04		9.58		10.27		10.71	-8.20	OK	NE					36
TO SOUTHWEST TRUNK												0%																
do not delete this line												0%																
SOUTHWEST TRUNK												100% SW TRUNK from Kent	31.06	31.06	42.32	42.32	44.92	44.92	45.50	45.50			X					
SW TRUNK @Aub3#48@124.5	SWK1	SWK2	72	0.013	123.90	123.12	1000	0.0008	4.19	76.5	0.0008	39% AUBURN3 #48	16.70	47.77	21.81	64.13	23.20	68.12	23.72	69.22	-7.30	OK	NE					
SW TRUNK	SWK2	SWK3	72	0.013	123.12	116.10	9000	0.0008	4.19	76.5	0.0008	0%		47.77		64.13		68.12		69.22	-7.30	OK	NE					
SW TRUNK @ Meeker	SWK3	SWK4	72	0.013	116.10	108.09	8800	0.0009	4.53	82.6	0.0009	100% MEEKER TRUNK	0.87	48.64	1.00	65.13	1.05	69.17	1.07	70.29	-12.35	OK	NE					
SW TRUNK	SWK4	SWK5	72	0.013	108.09	107.91	200	0.0009	4.53	82.6	0.0009	0%		48.64		65.13		69.17		70.29	-12.35	OK	NE					
SW TRUNK	SWK5	SWK6	72	0.013	107.91	107.36	600	0.0009	4.53	82.6	0.0009	0%		48.64		65.13		69.17		70.29	-12.35	OK	NE					
SW TRUNK to S. Int.	SWK6	R18A-56	72	0.013	107.36	107.00	400	0.0009	4.53	82.6	0.0009	0%		48.64		65.13		69.17		70.29	-12.35	OK	NE					
Section*			72	0.013		16.90	20000	0.0008	4.37	79.6	0.0008	0%		48.64		65.13		69.17		70.29	-9.35	OK	NE					72
TO SOUTH INTERCEPTOR												0%																

Task 250 Report:
KENT PLANNING ZONE - REROUTING ALTERNATIVE
20% I/I reduction effective in 2000

FACILITY	UP-STREAM MH #	DOWN-STREAM MH #	DIA. (IN)	Manning n	UP-STREAM INV ELEV	DOWN-STREAM INV ELEV	LENGTH (FT.)	SLOPE (FT/FT)	Vfull (FPS)	Cap. (MGD)	Herrera New Slope	Modification Origin of Flow Percent	2010 Design Flow Inflow (MGD)	2010 Design Flow Total (MGD)	2020 Design Flow Inflow (MGD)	2020 Design Flow Total (MGD)	2030 Design Flow Inflow (MGD)	2030 Design Flow Total (MGD)	2050 Design Flow Inflow (MGD)	2050 Design Flow Total (MGD)	Excess (+) (MGD)	2050 Parallel Pipe (in.)	Decade Exceeded	Surcharge: any negative value in "BW elev" Δ elev FULL pipe	Δ elev	Δ−Δfull	BW elev (ft)	Proposed Diameter (inches)
do not delete this line												100% AUBURN3 from Kent	23.59	23.59	28.38	28.38	30.16	30.16	30.72	30.72			X					
RE*AUBURN3	R18H-49	R18H-48	72	0.013	124.70	124.50	1000	0.0002	2.12	38.7	0.0008	0%		23.59		28.38		30.16		30.72	-8.02	OK	NE					
												100% S256TH CORR	16.55	40.13	22.95	51.33	24.38	54.53	24.95	55.67			X					
												100% S SOOS	2.70	42.83	4.60	55.93	4.94	59.48	5.15	60.82			X					
												-39% AUBURN3 #48	-16.70	26.13	-21.81	34.12	-23.20	36.28	-23.72	37.10			X					
RE*AUBURN3	R18H-48	R18H-47	72	0.013	124.50	123.70	659	0.0012	5.23	95.5	0.0008	0%		26.13		34.12		36.28		37.10	-58.36	OK	NE					
												0%		26.13		34.12		36.28		37.10			X					
RE*AUBURN3	R18H-47	R18H-45	72	0.013	123.70	123.30	827	0.0005	3.30	60.3	0.0008	0%		26.13		34.12		36.28		37.10	-23.15	OK	NE					
RE*AUBURN3	R18H-45	R18H-44	72	0.013	123.30	123.20	454	0.0002	2.23	40.7	0.0008	10% aub2-s	0.33	26.45	0.57	34.68	0.60	36.88	0.61	37.72	-2.94	OK	NE					
RE*AUBURN3	R18H-44	R18H-43	72	0.013	123.20	122.90	592	0.0005	3.38	61.7	0.0008	0%		26.45		34.68		36.88		37.72	-23.95	OK	NE					
RE*AUBURN3	R18H-43	R18H-42	72	0.013	122.90	122.40	575	0.0009	4.43	80.8	0.0008	0%		26.45		34.68		36.88		37.72	-43.07	OK	NE					
	Section*		72	0.013		2.30	3107	0.0007	4.09	74.5	0.0007	0%		26.45		34.68		36.88		37.72	-36.83	OK	NE					OK
RE*AUBURN2	R18H-42	R18H-41	72	0.013	122.40	122.00	575	0.0007	3.96	72.3	0.0008	68% aub2-s	2.22	28.68	3.85	38.53	4.09	40.98	4.18	41.90	-30.36	OK	NE					
RE*AUBURN2	R18H-41	R18H-40	72	0.013	122.00	121.60	575	0.0007	3.96	72.3	0.0008	0%		28.68		38.53		40.98		41.90	-30.36	OK	NE					
RE*AUBURN2	R18H-40	R18H-39	72	0.013	121.60	121.10	518	0.0010	4.67	85.1	0.0008	0%		28.68		38.53		40.98		41.90	-43.22	OK	NE					
RE*AUBURN2	R18H-39	R18H-38	72	0.013	121.10	120.80	570	0.0005	3.45	62.9	0.0008	0%		28.68		38.53		40.98		41.90	-20.95	OK	NE					
RE*AUBURN2	R18H-38	R18H-37	72	0.013	120.80	120.20	610	0.0010	4.71	85.9	0.0008	22% aub2-s	0.72	29.40	1.24	39.78	1.32	42.30	1.35	43.25	-42.67	OK	NE					
RE*AUBURN2*	R18H-37*	R18H-36	72	0.013	120.20	119.51	610	0.0011	5.05	92.1	0.0008	0%		29.40		39.78		42.30		43.25	-48.89	OK	NE	0.15	0.69	0.54	0.45	
RE*AUBURN2*	R18H-36*	R18H-35	72	0.013	119.51	119.56	155	-0.0003			0.0008	0%		29.40		39.78		42.30		43.25	43.25	60	2010	0.04	-0.05	-0.09	-0.09	ignore
	Section*		72	0.013		2.84	3613	0.0008		76.8	0.0008	0%		29.40		39.78		42.30		43.25	-33.56	OK	NE					OK
RE*AUBURN2 SIPHON	R18H-35	R18H-34	54	0.013	119.56	118.40	200	0.0058	64%	96.9		0%		29.40		39.78		42.30		43.25	-53.63	OK	NE					
RE*AUBURN2 SIPHON	R18H-35	R18H-34	42	0.013	119.56	118.40	200	0.0058	33%	49.6		0%		29.40		39.78		42.30		43.25	-6.32	OK	NE					
RE*AUBURN2 SIPHON	R18H-35	R18H-34	18	0.013	119.56	118.40	200	0.0058	3%	5.2		0%		29.40		39.78		42.30		43.25	38.08		2010					
	Section*		64	0.013	119.56	118.40	200					0%		29.40		39.78		42.30		43.25								ok
RE*AUBURN2	R18H-34	R18H-33	72	0.013	118.40	118.30	186	0.0005	3.48	63.5	0.0008	70% aub2-n	1.43	30.83	1.54	41.31	1.64	43.94	1.67	44.92	-18.60	OK	NE					
RE*AUBURN2	R18H-33	R18H-32	72	0.013	118.30	117.90	535	0.0007	4.11	74.9	0.0008	0%		30.83		41.31		43.94		44.92	-29.99	OK	NE					
RE*AUBURN2	R18H-32	R18H-31	72	0.013	117.90	117.50	517	0.0008	4.18	76.2	0.0008	0%		30.83		41.31		43.94		44.92	-31.29	OK	NE					
RE*AUBURN2	R18H-31	R18H-30	72	0.013	117.50	117.10	518	0.0008	4.17	76.1	0.0008	0%		30.83		41.31		43.94		44.92	-31.21	OK	NE					
RE*AUBURN2	R18H-30	R18H-29	72	0.013	117.10	116.40	517	0.0014	5.53	100.8	0.0008	0%		30.83		41.31		43.94		44.92	-55.89	OK	NE					
RE*AUBURN2	R18H-29	R18H-28	72	0.013	116.40	115.90	517	0.0010	4.67	85.2	0.0008	0%		30.83		41.31		43.94		44.92	-40.28	OK	NE	0.14	0.50	0.36	0.10	
RE*AUBURN2@ SR516	R18H-28	R18H-27	72	0.013	115.90	116.10	220	-0.0009			0.0008	0%		30.83		41.31		43.94		44.92	44.92	60	2010	0.06	-0.20	-0.26	-0.26	ignore
RE*AUBURN2@ SR516	R18H-27	R18H-26	72	0.013	116.10	115.90	179	0.0011	5.02	91.6	0.0008	30% aub2-n	0.61	31.45	0.66	41.97	0.70	44.64	0.72	45.63	-45.94	OK	NE					
RE*AUBURN2	R18H-26	R18H-25	72	0.013	115.90	115.70	416	0.0005	3.29	60.1	0.0008	0%		31.45		41.97		44.64		45.63	-14.44	OK	NE					
RE*AUBURN2	R18H-25	R18H-24	72	0.013	115.70	114.40	736	0.0018	6.31	115.1	0.0008	0%		31.45		41.97		44.64		45.63	-69.51	OK	NE	0.20	1.30	1.10	0.76	
RE*AUBURN2	R18H-24	R18H-23	72	0.013	114.40	114.70	116	-0.0026			0.0008	0%		31.45		41.97		44.64		45.63	45.63	60	2010	0.03	-0.30	-0.33	-0.33	ignore
RE*AUBURN2	R18H-23	R18H-22	72	0.013	114.70	114.50	577	0.0003	2.80	51.0	0.0008	0%		31.45		41.97		44.64		45.63	-5.37	OK	NE					
	Section		72	0.013		3.90	5034	0.0008	4.18	76.3	0.0008	0%		31.45		41.97		44.64		45.63	-30.62	OK	NE					OK
RE*AUBURN1	R18H-22	R18H-21A	72	0.013	114.50	114.20	410	0.0007	4.06	74.1	0.0008	0%		31.45		41.97		44.64		45.63	-28.48	OK	NE					
RE*AUBURN1	R18H-21A	R18H-21	72	0.013	114.20	113.90	410	0.0007	4.06	74.1	0.0008	0%		31.45		41.97		44.64		45.63	-28.48	OK	NE					
RE*AUBURN1	R18H-21	R18H-19	72	0.013	113.90	113.60	492	0.0006	3.71	67.7	0.0008	0%		31.45		41.97		44.64		45.63	-22.02	OK	NE					
RE*AUBURN1@ SR 167	R18H-19	R18H-18	72	0.013	113.60	113.20	260	0.0015	5.89	107.5	0.0008	100% JAMES TRUNK	8.04	39.49	9.58	51.55	10.27	54.90	10.71	56.34	-51.11	OK	NE					
RE*AUBURN1	R18H-18	R18H-17	72	0.013	113.20	112.90	260	0.0012	5.10	93.1	0.0008	0%		39.49		51.55		54.90		56.34	-36.72	OK	NE					
RE*AUBURN1	R18H-17	R18H-16	72	0.013	112.90	112.50	468	0.0009	4.39	80.1	0.0008	0%		39.49		51.55		54.90		56.34	-23.75	OK	NE					
RE*AUBURN1	R18H-16	R18H-15	72	0.013	112.50	112.20	413	0.0007	4.05	73.8	0.0008	0%		39.49		51.55		54.90		56.34	-17.49	OK	NE					
RE*AUBURN1	R18H-15	R18H-14	72	0.013	112.20	111.90	546	0.0005	3.52	64.2	0.0008	25% xval-x	0.24	39.73	0.25	51.80	0.26	55.17	0.27	56.61	-7.61	OK	NE					
RE*AUBURN1	R18H-14	R18H-13	72	0.013	111.90	111.50	540	0.0007	4.09	74.6	0.0008	0%		39.73		51.80		55.17		56.61	-17.95	OK	NE					
RE*AUBURN1	R18H-13	R18H-12	72	0.013	111.50	111.00	530	0.0009	4.61	84.1	0.0008	0%		39.73		51.80		55.17		56.61	-27.54	OK	NE					
RE*AUBURN1	R18H-12	R18H-11	72	0.013	111.00	110.50	655	0.0008	4.15	75.7	0.0008	0%		39.73		51.80		55.17		56.61	-19.09	OK	NE					
RE*AUBURN1	R18H-11	R18H-10	72	0.013	110.50	110.00	640	0.0008	4.20	76.6	0.0008	0%		39.73		51.80		55.17		56.61	-19.96	OK	NE					
RE*AUBURN1	R18H-10	R18H-09	72	0.013	110.00	109.60	398	0.0010	4.76	86.9	0.0008	0%		39.73		51.80		55.17		56.61	-30.24	OK	NE					

KENT PLANNING ZONE
TASK 250 REROUTING ALTERNATIVE
20% I/I reduction effective in 2000

Task 250 Report:
KENT PLANNING ZONE - REROUTING ALTERNATIVE
20% I/I reduction effective in 2000

FACILITY	UP-STREAM MH #	DOWN-STREAM MH #	DIA. (IN)	Manning n	UP-STREAM INV ELEV	DOWN-STREAM INV ELEV	LENGTH (FT.)	SLOPE (FT/FT)	Vfull (FPS)	Cap. (MGD)	Herrera New Slope	Modification Origin of Flow Percent	2010 Design Flow Inflow (MGD)	2010 Design Flow Total (MGD)	2020 Design Flow Inflow (MGD)	2020 Design Flow Total (MGD)	2030 Design Flow Inflow (MGD)	2030 Design Flow Total (MGD)	2050 Design Flow Inflow (MGD)	2050 Design Flow Total (MGD)	Excess (+) (MGD)	2050 Parallel Pipe (in.)	Decade Exceeded	Surcharge: any negative value in "BW elev" Δ elev FULL pipe	Δ elev	Δ−Δfull	BW elev (ft)	Proposed Diameter (inches)
RE*AUBURN1	R18H-09	R18H-08	72	0.013	109.60	109.40	112	0.0018	6.35	115.8	0.0008	100% xval-s	0.34	40.06	0.36	52.16	0.38	55.54	0.38	56.99	-58.78	OK	NE					
RE*AUBURN1	R18H-08	R18H-07	72	0.013	109.40	109.10	629	0.0005	3.28	59.8	0.0008	0%		40.06		52.16		55.54		56.99	-2.84	OK	NE					
RE*AUBURN1	R18H-07	R18H-06	72	0.013	109.10	108.60	629	0.0008	4.23	77.2	0.0008	0%		40.06		52.16		55.54		56.99	-20.25	OK	NE					
RE*AUBURN1	R18H-06	R18H-05	72	0.013	108.60	108.00	534	0.0011	5.03	91.8	0.0008	0%		40.06		52.16		55.54		56.99	-34.84	OK	NE					
RE*AUBURN1	R18H-05	R18H-04	72	0.013	108.00	107.50	565	0.0009	4.47	81.5	0.0008	0%		40.06		52.16		55.54		56.99	-24.51	OK	NE					
RE*AUBURN1	R18H-04	R18H-03	72	0.013	107.50	107.20	494	0.0006	3.70	67.5	0.0008	0%		40.06		52.16		55.54		56.99	-10.52	OK	NE					
RE*AUBURN1	R18H-03	R18H-02	72	0.013	107.20	106.80	520	0.0008	4.17	76.0	0.0008	0%		40.06		52.16		55.54		56.99	-18.99	OK	NE					
RE*AUBURN1	R18H-02	R18H-01	72	0.013	106.80	106.40	520	0.0008	4.17	76.0	0.0008	0%		40.06		52.16		55.54		56.99	-18.99	OK	NE					
Section			72	0.013		8.10	10025	0.0008	4.27	77.9	0.0008	0%		40.06		52.16		55.54		56.99	-20.88	OK	NE					OK
% TO SOUTH INTERCEPTOR												-50% AUBURN1	-20.03	20.03	-26.08	26.08	-27.77	27.77	-28.50	28.50			X					
RE*AUBURN1	R18H-01	R18G-01A	60	0.013	106.40	105.90	36	0.0139	15.67	198.6	0.0026	25% xval-x	0.24	20.27	0.25	26.33	0.26	28.04	0.27	28.76	-169.79	OK	NE					
RE*KENTX	R18G-01A	R18G-01	72	0.013	104.00	103.80	635	0.0003	2.67	48.6	0.0026	0%		20.27		26.33		28.04		28.76	-19.86	OK	NE					
RE*KENTX	R18G-01	52	72	0.013	103.80	103.70	353	0.0003	2.53	46.1	0.0026	0%		20.27		26.33		28.04		28.76	-17.35	OK	NE					
Section			72	0.013		2.70	1024	0.0026	7.71	140.7	0.0026	0%		20.27		26.33		28.04		28.76	-111.92	OK	NE					OK
TO ULID1/5#52																												

Task 250 Report:
KENT PLANNING ZONE - REROUTING ALTERNATIVE
20% I/I reduction effective in 2000

FACILITY	UP-STREAM MH #	DOWN-STREAM MH #	DIA. (IN)	Manning n	UP-STREAM INV ELEV	DOWN-STREAM INV ELEV	LENGTH (FT.)	SLOPE (FT/FT)	Vfull (FPS)	Cap. (MGD)	Herrera New Slope	Modification Origin of Flow Percent	2010 Design Flow Inflow (MGD)	2010 Design Flow Total (MGD)	2020 Design Flow Inflow (MGD)	2020 Design Flow Total (MGD)	2030 Design Flow Inflow (MGD)	2030 Design Flow Total (MGD)	2050 Design Flow Inflow (MGD)	2050 Design Flow Total (MGD)	Excess (+) (MGD)	2050 Parallel Pipe (in.)	Decade Exceeded	Surcharge: any negative value in "BW elev" Δ elev FULL pipe	Δ elev	Δ−Δfull	BW elev (ft)	Proposed Diameter (inches)
RE*WHILL	15	14	24	0.013	155.30	153.30	221	0.0090	6.87	13.9	0.0055	100% whill-x	5.09	5.09	6.21	6.21	6.60	6.60	6.71	6.71	-7.22	OK	NE					
RE*WHILL	14	13	24	0.013	153.30	146.20	249	0.0285	12.19	24.7	0.0055	0%		5.09		6.21		6.60		6.71	-18.00	OK	NE					
RE*WHILL	13	12	24	0.013	146.20	145.40	286	0.0028	3.82	7.7	0.0055	0%		5.09		6.21		6.60		6.71	-1.04	OK	NE	0.60	0.80	0.20	-0.07	
RE*WHILL	12	11	24	0.013	145.40	144.60	514	0.0016	2.85	5.8	0.0055	0%		5.09		6.21		6.60		6.71	0.93	12	2020	1.08	0.80	-0.28	-0.28	ignore
RE*WHILL	11	10	24	0.013	144.60	144.40	95	0.0021	3.31	6.7	0.0055	0%		5.09		6.21		6.60		6.71	-0.01	OK	NE					
RE*WHILL	10	09	24	0.013	144.40	143.50	222	0.0041	4.60	9.3	0.0055	0%		5.09		6.21		6.60		6.71	-2.61	OK	NE					
RE*WHILL	09	08	24	0.013	143.50	142.30	305	0.0039	4.53	9.2	0.0055	0%		5.09		6.21		6.60		6.71	-2.47	OK	NE					
RE*WHILL	08	07	24	0.013	142.30	140.00	344	0.0067	5.90	12.0	0.0055	0%		5.09		6.21		6.60		6.71	-5.26	OK	NE					
RE*WHILL	07	06A	24	0.013	140.00	131.20	500	0.0176	9.58	19.4	0.0055	0%		5.09		6.21		6.60		6.71	-12.71	OK	NE					
RE*WHILL	06A	06B	24	0.013	131.20	131.10	15	0.0067	5.90	11.9	0.0055	-60% whill-x	-3.05	2.03	-3.73	2.48	-3.96	2.64	-4.02	2.68	-9.27	OK	NE					
RE*WHILL	06B	06	24	0.013	131.10	130.40	335	0.0021	3.30	6.7	0.0055	0%		2.03		2.48		2.64		2.68	-4.01	OK	NE					
RE*WHILL	06	05	24	0.013	130.40	129.70	350	0.0020	3.23	6.5	0.0055	0%		2.03		2.48		2.64		2.68	-3.86	OK	NE					
RE*WHILL	05	04	24	0.013	129.70	128.70	500	0.0020	3.23	6.5	0.0055	0%		2.03		2.48		2.64		2.68	-3.86	OK	NE					
RE*WHILL	04	03	24	0.013	128.70	127.90	410	0.0020	3.19	6.5	0.0055	0%		2.03		2.48		2.64		2.68	-3.78	OK	NE					
RE*WHILL	03	02	24	0.013	128.90	127.00	413	0.0046	4.90	9.9	0.0055	0%		2.03		2.48		2.64		2.68	-7.25	OK	NE					
RE*WHILL	02	01A	24	0.013	127.00	126.50	240	0.0021	3.29	6.7	0.0055	5% ulid4-x	0.10	2.13	0.11	2.59	0.12	2.76	0.12	2.80	-3.88	OK	NE					
RE*WHILL	01A	01	24	0.013	126.50	126.40	96	0.0010	2.33	4.7	0.0055	0% whill-x		2.13		2.59		2.76		2.80	-1.92	OK	NE					
RE*WHILL	01	S-31A	24	0.013	126.40	125.70	40	0.0175	9.55	19.4	0.0055	0%		2.13		2.59		2.76		2.80	-16.56	OK	NE					
RE*WHILL	S-31A	S-31B	24	0.013	125.70	125.50	294	0.0007	1.88	3.8	0.0055	0%		2.13		2.59		2.76		2.80	-1.02	OK	NE					
	Section*		24	0.013		29.80	5429	0.0055	5.35	10.8	0.0055	0%		2.13		2.59		2.76		2.80	-8.04	OK	NE					OK
RE*WHILL	S-31B	S-31	24	0.013	125.50	122.30	14	0.2286	34.52	70.0	0.2286	0%		2.13		2.59		2.76		2.80	-67.17	OK	NE					
RE*ULID1/4	S-31	S-30	24	0.013	122.30	121.50	448	0.0018	3.05	6.2	0.0013	0%		2.13		2.59		2.76		2.80	-3.39	OK	NE					
RE*ULID1/4	S-30	S-29	24	0.013	121.50	120.00	454	0.0033	4.15	8.4	0.0013	5% ulid4-x	0.10	2.23	0.11	2.71	0.12	2.87	0.12	2.92	-5.49	OK	NE	0.18	1.50	1.32	1.24	
RE*ULID1/4	S-29	S-28	24	0.013	120.00	119.90	443	0.0002	1.09	2.2	0.0013	0%		2.23		2.71		2.87		2.92	0.72	12	2010	0.18	0.10	-0.08	-0.08	ignore
RE*ULID1/4	S-28	S-27	24	0.013	119.90	119.10	446	0.0018	3.06	6.2	0.0013	30% ulid4-x	0.58	2.81	0.66	3.37	0.70	3.58	0.71	3.63	-2.57	OK	NE					
RE*ULID1/4	S-27	S-26	24	0.013	119.10	118.10	463	0.0022	3.35	6.8	0.0013	0%		2.81		3.37		3.58		3.63	-3.17	OK	NE					
RE*ULID1/4	S-26	S-25	24	0.013	118.10	117.30	405	0.0020	3.21	6.5	0.0013	0%		2.81		3.37		3.58		3.63	-2.87	OK	NE					
RE*ULID1/4	S-25	S-24	24	0.013	117.30	116.70	285	0.0021	3.31	6.7	0.0013	0%		2.81		3.37		3.58		3.63	-3.08	OK	NE					
RE*ULID1/4	S-24	S-23	24	0.013	116.70	115.90	353	0.0023	3.44	7.0	0.0013	0%		2.81		3.37		3.58		3.63	-3.33	OK	NE					
	Section		24	0.013		6.40	3297	0.0019	3.18	6.4	0.0019	0%		2.81		3.37		3.58		3.63	-2.81	OK	NE					OK
RE*ULID1/4	S-23	S-22	30	0.013	115.90	115.30	348	0.0017	3.48	11.0	0.0013	15% ulid4-x	0.29	3.10	0.33	3.70	0.35	3.93	0.36	3.99	-7.03	OK	NE					
RE*ULID1/4	S-22	S-20	30	0.013	115.30	115.00	409	0.0007	2.27	7.2	0.0013	0%		3.10		3.70		3.93		3.99	-3.20	OK	NE					
RE*ULID1/4	S-20	S-19	30	0.013	115.00	114.70	320	0.0009	2.56	8.1	0.0013	0%		3.10		3.70		3.93		3.99	-4.13	OK	NE					
RE*ULID1/4	S-19	S-18	30	0.013	114.70	114.50	201	0.0010	2.64	8.4	0.0013	20% 250s-x	0.55	3.64	0.66	4.36	0.70	4.63	0.71	4.70	-3.67	OK	NE					
RE*ULID1/4	S-18	S-17	30	0.013	114.50	114.20	185	0.0016	3.37	10.7	0.0013	0%		3.64		4.36		4.63		4.70	-5.99	OK	NE					
	Section		30	0.013		1.70	1463	0.0012	2.86	9.0	0.0012	0%		3.64		4.36		4.63		4.70	-4.35	OK	NE					OK
RE*ULID250	S-17	S-16	30	0.013	114.20	114.00	290	0.0007	2.20	7.0	0.0013	0%		3.64		4.36		4.63		4.70	-2.27	OK	NE					
RE*ULID250	S-16	S-15A	30	0.013	114.00	113.60	500	0.0008	2.37	7.5	0.0013	0%		3.64		4.36		4.63		4.70	-2.80	OK	NE					
RE*ULID250	S-15	S-14	30	0.013	113.60	113.10	502	0.0010	2.64	8.4	0.0013	0%		3.64		4.36		4.63		4.70	-3.68	OK	NE					
RE*ULID250	S-14	S-13	30	0.013	113.10	112.60	500	0.0010	2.65	8.4	0.0013	0%		3.64		4.36		4.63		4.70	-3.70	OK	NE					
RE*ULID250	S-13	S-12	30	0.013	112.60	112.20	500	0.0008	2.37	7.5	0.0013	0%		3.64		4.36		4.63		4.70	-2.80	OK	NE					
RE*ULID250	S-12	S-11	30	0.013	112.20	111.40	324	0.0025	4.16	13.2	0.0013	0%		3.64		4.36		4.63		4.70	-8.49	OK	NE	0.10	0.80	0.70	0.66	
RE*ULID250	S-11	S-10	30	0.013	111.40	111.30	440	0.0002	1.26	4.0	0.0013	0%		3.64		4.36		4.63		4.70	0.70	12	2020	0.14	0.10	-0.04	-0.04	ignore
	Section		30	0.013		2.90	3056	0.0009	2.58	8.2	0.0009	0%		3.64		4.36		4.63		4.70	-3.48	OK	NE					OK
RE*ULID250	S-10	S-09	36	0.013	111.30	111.10	445	0.0004	2.01	9.1	0.0013	0%		3.64		4.36		4.63		4.70	-4.45	OK	NE					
RE*ULID250	S-09	S-08	36	0.013	111.10	110.90	446	0.0004	2.00	9.1	0.0013	0%		3.64		4.36		4.63		4.70	-4.44	OK	NE					
RE*ULID250	S-08	S-07	36	0.013	110.90	110.80	350	0.0003	1.60	7.3	0.0013	0%		3.64		4.36		4.63		4.70	-2.59	OK	NE					
RE*ULID250	S-07	S-06	36	0.013	110.80	110.50	497	0.0006	2.32	10.6	0.0013	0%		3.64		4.36		4.63		4.70	-5.90	OK	NE					
	Section*		36	0.013		0.80	1738	0.0005	2.03	9.3	0.0005	0%		3.64		4.36		4.63		4.70	-4.56	OK	NE					
RE*ULID250	S-06	S-05	36	0.013	110.50	110.20	305	0.0010	2.97	13.5	0.0013	0%		3.64		4.36		4.63		4.70	-8.83	OK	NE					
RE*ULID250	S-05	S-04A	36	0.013	110.20	110.10	255	0.0004	1.87	8.5	0.0013	0%		3.64		4.36		4.63		4.70	-3.84	OK	NE					
RE*ULID250	S-04A	S-03	36	0.013	110.10	109.60	430	0.0012	3.23	14.7	0.0013	80% 250s-x	2.20	5.84	2.65	7.01	2.80	7.43	2.83	7.53	-7.19	OK	NE					
RE*ULID250	S-03	S-02	36	0.013	109.60	109.00	432	0.0014	3.53	16.1	0.0013	0%		5.84		7.01		7.43		7.53	-8.55	OK	NE					
RE*ULID250	S-02	S-01	36	0.013	109.00	108.40	455	0.0013	3.44	15.7	0.0013	0%		5.84		7.01		7.43		7.53	-8.14	OK	NE					
RE*ULID250	S-01	N-01	36	0.013	108.40	107.80	503	0.0012	3.27	14.9	0.0013	0%		5.84		7.01		7.43		7.53	-7.38	OK	NE					
RE*ULID250	N-01	N-02	36	0.013	107.80	105.90	525	0.0036	5.69	26.0	0.0036	0%		5.84		7.01		7.43		7.53	-18.43	OK	NE					
	Section*		36	0.013		4.60	2905	0.0016	3.76	17.2	0.0016	0%		5.84		7.01		7.43		7.53	-9.64	OK	NE					OK
TO ULID 250 #N-02																												

KENT PLANNING ZONE
TASK 250 REROUTING ALTERNATIVE
20% I/I reduction effective in 2000

Task 250 Report:
KENT PLANNING ZONE - REROUTING ALTERNATIVE
20% I/I reduction effective in 2000

FACILITY	UP-STREAM MH #	DOWN-STREAM MH #	DIA. (IN)	Manning n	UP-STREAM INV ELEV	DOWN-STREAM INV ELEV	LENGTH (FT.)	SLOPE (FT/FT)	Vfull (FPS)	Cap. (MGD)	Herrera New Slope	Modification Origin of Flow Percent	2010 Design Flow Inflow (MGD)	2010 Design Flow Total (MGD)	2020 Design Flow Inflow (MGD)	2020 Design Flow Total (MGD)	2030 Design Flow Inflow (MGD)	2030 Design Flow Total (MGD)	2050 Design Flow Inflow (MGD)	2050 Design Flow Total (MGD)	Excess (+) (MGD)	2050 Parallel Pipe (in.)	Decade Exceeded	Surcharge: any negative value in "BW elev" Δ elev FULL pipe	Δ elev	Δ−Δfull	BW elev (ft)	Proposed Diameter (inches)
RE*ULID250	N-06G	N-06F	15	0.013	113.70	112.50	151	0.0079	4.70	3.7	0.0017	80% 250n-x	2.80	2.80	4.14	4.14	4.37	4.37	4.39	4.39	0.67	12	2020					
RE*ULID250	N-06F	N-06E	27	0.013	112.50	110.70	455	0.0040	4.91	12.6	0.0017	0%		2.80		4.14		4.37		4.39	-8.21	OK	NE					
RE*ULID250	N-06E	N-06D	27	0.013	110.70	108.40	451	0.0051	5.58	14.3	0.0017	10% 250n-x	0.35	3.15	0.52	4.66	0.55	4.92	0.55	4.94	-9.37	OK	NE					
	Section*		27	0.013		5.30	1057	0.0050	5.53	14.2	0.0050	0%		3.15		4.66		4.92		4.94	-9.24	OK	NE					OK
RE*ULID250	N-06D	N-06C	36	0.013	108.40	108.20	387	0.0005	2.15	9.8	0.0017	0%		3.15		4.66		4.92		4.94	-4.86	OK	NE					
RE*ULID250	N-06C	N-06B	36	0.013	108.20	108.10	282	0.0004	1.78	8.1	0.0017	0%		3.15		4.66		4.92		4.94	-3.18	OK	NE					
RE*ULID250	N-06B	N-06A	36	0.013	108.10	107.90	327	0.0006	2.34	10.7	0.0017	0%		3.15		4.66		4.92		4.94	-5.73	OK	NE					
RE*ULID250	N-06A	N-06	36	0.013	107.90	107.80	422	0.0002	1.46	6.6	0.0017	0%		3.15		4.66		4.92		4.94	-1.70	OK	NE					
RE*ULID250	N-06	N-05	36	0.013	107.80	107.70	180	0.0006	2.23	10.2	0.0017	0%		3.15		4.66		4.92		4.94	-5.22	OK	NE					
RE*ULID250	N-05	N-04	36	0.013	107.70	107.40	423	0.0007	2.52	11.5	0.0017	10% 250n-x	0.35	3.50	0.52	5.17	0.55	5.47	0.55	5.49	-6.00	OK	NE					
RE*ULID250	N-04	N-03	36	0.013	107.40	107.20	441	0.0005	2.01	9.2	0.0017	0%		3.50		5.17		5.47		5.49	-3.69	OK	NE					
RE*ULID250	N-03	N-02A	36	0.013	107.20	107.10	287	0.0003	1.77	8.1	0.0017	0%		3.50		5.17		5.47		5.49	-2.56	OK	NE					
	Section*		36	0.013		1.30	2749	0.0005	2.06	9.4	0.0005	0%		3.50		5.17		5.47		5.49	-3.89	OK	NE					OK
RE*ULID250	N-02A	N-02	36	0.013	107.10	105.90	135	0.0089	8.92	40.7	0.0089	100% ULID250S	5.84	9.35	7.01	12.18	7.43	12.89	7.53	13.02	-27.66	OK	NE					
	Section*		36	0.013		1.20	135	0.0089	8.92	40.7	0.0089	0%		9.35		12.18		12.89		13.02	-27.66	OK	NE					OK
RE*KENTX	R18G-07	R18G-06	54	0.013	106.00	105.60	625	0.0006	3.14	32.2	0.0006	25% xval-x	0.24	9.58	0.25	12.43	0.26	13.16	0.27	13.29	-18.90	OK	NE					
RE*KENTX	R18G-06	R18G-05	54	0.013	105.60	105.20	618	0.0006	3.15	32.4	0.0006	0%		9.58		12.43		13.16		13.29	-19.08	OK	NE					
RE*KENTX	R18G-05	R18G-04	54	0.013	105.20	105.40	74	-0.0027			0.0006	0%		9.58		12.43		13.16		13.29	13.29	39	2010					
RE*KENTX	R18G-04	R18G-03	54	0.013	105.40	105.00	619	0.0006	3.15	32.3	0.0006	0%		9.58		12.43		13.16		13.29	-19.05	OK	NE					OK
RE*KENTX to SI	R18G-03	R18A-57	54	0.013	105.00	104.10	664	0.0014	4.56	46.8	0.0014	0%		9.58		12.43		13.16		13.29	-33.55	OK	NE					
	Section*		54	0.013		1.90	2600	0.0007	3.35	34.4	0.0007	0%		9.58		12.43		13.16		13.29	-21.10	OK	NE					OK
TO SOUTH INTERCEPTOR																												

Task 250 Report:
KENT PLANNING ZONE - REROUTING ALTERNATIVE
20% I/I reduction effective in 2000

FACILITY	UP-STREAM MH #	DOWN-STREAM MH #	DIA. (IN)	Manning n	UP-STREAM INV ELEV	DOWN-STREAM INV ELEV	LENGTH (FT.)	SLOPE (FT/FT)	Vfull (FPS)	Cap. (MGD)	Herrera New Slope	Modification Origin of Flow Percent	2010 Design Flow Inflow (MGD)	2010 Design Flow Total (MGD)	2020 Design Flow Inflow (MGD)	2020 Design Flow Total (MGD)	2030 Design Flow Inflow (MGD)	2030 Design Flow Total (MGD)	2050 Design Flow Inflow (MGD)	2050 Design Flow Total (MGD)	Excess (+) (MGD)	2050 Parallel Pipe (in.)	Decade Exceeded	Surcharge: any negative value in "BW elev" Δ elev FULL pipe	Δ elev	Δ−Δfull	BW elev (ft)	Proposed Diameter (inches)
do not delete this line												8% mill-x	0.77	0.77	0.89	0.89	0.95	0.95	0.98	0.98								
RE*GARISN	R18-30*	R18-29	24	0.013	378.04	377.67	110	0.0034	4.18	8.5	0.0034	55% gar-x	2.74	3.51	3.31	4.20	3.53	4.47	3.65	4.64	-3.84	OK	NE					
RE*GARISN	R18-29*	R18-28	12	0.013	377.67	347.35	206	0.1472	17.46	8.8	0.1472	0%		3.51		4.20		4.47		4.64	-4.21	OK	NE					
RE*GARISN	R18-28*	R18-27	12	0.013	347.35	326.23	195	0.1083	14.97	7.6	0.1083	0%		3.51		4.20		4.47		4.64	-2.95	OK	NE					
RE*GARISN	R18-27*	R18-26	12	0.013	326.23	302.19	152	0.1580	18.08	9.2	0.1580	2% gar-x	0.10	3.61	0.12	4.32	0.13	4.60	0.13	4.77	-4.39	OK	NE					
RE*GARISN	R18-26*	R18-25	12	0.013	302.19	276.30	335	0.0773	12.64	6.4	0.0052	0%		3.61		4.32		4.60		4.77	-1.64	OK	NE					
	Section*		12	0.013		101.74	999	0.1019	14.51	7.4	0.0052	0%		3.61		4.32		4.60		4.77	-2.58	OK	NE					OK
RE*GARISN	R18-25*	R18-24	18	0.013	275.59	273.89	325	0.0052	4.31	4.9	0.0051	0%		3.61		4.32		4.60		4.77	-0.14	OK	NE	1.60	1.70	0.10	0.09	
RE*GARISN	R18-24*	R18-23	18	0.013	273.89	272.28	330	0.0049	4.16	4.7	0.0051	0%		3.61		4.32		4.60		4.77	0.02	3	2050	1.62	1.61	-0.01	-0.01	ignore
	Section*		18	0.013		3.31	655	0.0051	4.24	4.8	0.0051	0%		3.61		4.32		4.60		4.77	-0.06	OK	NE					OK
RE*GARISN	R18-23*	R18-22	12	0.013	272.28	254.65	235	0.0751	12.47	6.3	0.0751	5% gar-x	0.25	3.86	0.30	4.62	0.32	4.92	0.33	5.10	-1.21	OK	NE					
RE*GARISN	R18-22*	R18-21	12	0.013	254.65	223.41	210	0.1488	17.55	8.9	0.1488	7% gar-x	0.35	4.21	0.42	5.04	0.45	5.37	0.47	5.57	-3.32	OK	NE					
RE*GARISN	R18-21*	R18-20	12	0.013	219.39	202.44	69	0.2459	22.55	11.4	0.2459	0%		4.21		5.04		5.37		5.57	-5.86	OK	NE					
RE*GARISN	R18-20*	R18-19	12	0.013	202.44	190.27	97	0.1250	16.08	8.1	0.1250	0%		4.21		5.04		5.37		5.57	-2.58	OK	NE	5.66	12.17	6.51	5.09	
	Section*		12	0.013		82.01	611	0.1342	16.67	8.4	0.1342	0%		4.21		5.04		5.37		5.57	-2.88	OK	NE					OK
RE*GARISN	R18-19*	R18-18	15	0.013	190.27	188.11	202	0.0107	5.45	4.3	0.0107	0%		4.21		5.04		5.37		5.57	1.25	12	2020	3.58	2.16	-1.42	-1.42	12
RE*GARISN @ creek	R18-18*	R18-17	15	0.013	188.11	171.18	356	0.0475	11.51	9.1	0.0475	0%		4.21		5.04		5.37		5.57	-3.54	OK	NE					
	Section*		15	0.013		19.09	559	0.0342	9.75	7.7	0.0342	0%		4.21		5.04		5.37		5.57	-2.16	OK	NE					OK
RE*GARISN @ creek drop	R18-17*	R18-15	18	0.013	167.15	165.29	386	0.0048	4.14	4.7	0.0048	0%		4.21		5.04		5.37		5.57	0.85	12	2020	2.58	1.86	-0.72	-1.04	ignore
RE*GARISN @ creek	R18-15*	R18-14	18	0.013	165.29	163.34	339	0.0058	4.52	5.2	0.0058	0%		4.21		5.04		5.37		5.57	0.41	9	2030	2.27	1.95	-0.32	-0.32	ignore
RE*GARISN @ creek	R18-14*	R18-13	18	0.013	163.34	162.29	66	0.0159	7.51	8.6	0.0159	20% gar-x	1.00	5.21	1.20	6.24	1.28	6.65	1.33	6.90	-1.67	OK	NE					
	Section*		18	0.013		4.86	791	0.0061	4.67	5.3	0.0061	0%		5.21		6.24		6.65		6.90	1.57	12	2020					ok
RE*GARISN	R18-13*	R18-12A	24	0.013	161.70	161.47	101	0.0023	3.44	7.0	0.0023	0%		5.21		6.24		6.65		6.90	-0.08	OK	NE	0.22	0.23	0.01	-0.23	
RE*GARISN	R18-12A*	R18-12	24	0.013	161.47	161.21	155	0.0017	2.96	6.0	0.0017	0%		5.21		6.24		6.65		6.90	0.90	12	2020	0.34	0.26	-0.08	-0.23	ignore
RE*GARISN	R18-12*	R18-11	24	0.013	161.21	160.79	259	0.0016	2.91	5.9	0.0016	0%		5.21		6.24		6.65		6.90	1.00	15	2020	0.57	0.42	-0.15	-0.15	ignore
	Section*		24	0.013		0.91	515	0.0018	3.04	6.2	0.0018	0%		5.21		6.24		6.65		6.90	0.74	12	2020					ok
RE*GARISN	R18-11*	R18-10	18	0.013	160.79	130.78	356	0.0842	17.30	19.7	0.0842	11% gar-x	0.55	5.75	0.66	6.91	0.71	7.36	0.73	7.63	-12.10	OK	NE					
RE*GARISN drop	R18-10*	R18-09	18	0.013	118.98	115.51	260	0.0133	6.88	7.8	0.0133	0%		5.75		6.91		7.36		7.63	-0.22	OK	NE					
	Section*		18	0.013		45.28	617	0.0734	16.15	18.4	0.0133	0%		5.75		6.91		7.36		7.63	-10.79	OK	NE					OK
RE*GARISN	R18-09*	R18-08	24	0.013	115.51	115.09	420	0.0010	2.29	4.6	0.0012	34% c5e-x	0.37	6.12	0.41	7.31	0.43	7.79	0.44	8.06	3.43	21	2010					
RE*GARISN	R18-08*	R18-07	24	0.013	115.09	114.54	413	0.0013	2.64	5.3	0.0012	0%		6.12		7.31		7.79		8.06	2.72	21	2010					
RE*GARISN	R18-07*	R18-06	24	0.013	114.54	114.29	94	0.0027	3.72	7.5	0.0012	0%		6.12		7.31		7.79		8.06	0.52	12	2030					
RE*GARISN	R18-06*	R18-04	24	0.013	114.29	114.42	134	-0.0010			0.0012	0%		6.12		7.31		7.79		8.06	8.06	30	2010					
RE*GARISN	R18-04*	R18-03	24	0.013	114.42	113.88	418	0.0013	2.59	5.3	0.0012	0%		6.12		7.31		7.79		8.06	2.81	21	2010					
RE*GARISN	R18-03*	R18-02A	24	0.013	113.84	113.39	350	0.0013	2.59	5.2	0.0012	0%		6.12		7.31		7.79		8.06	2.82	21	2010					
RE*GARISN	R18-02A*	R18-02	24	0.013	113.39	113.29	96	0.0010	2.33	4.7	0.0012	0%		6.12		7.31		7.79		8.06	3.34	21	2010					
RE*GARISN	R18-02*	R18-01	24	0.013	113.29	112.63	365	0.0018	3.07	6.2	0.0012	33% c5e-x	0.35	6.47	0.40	7.71	0.42	8.21	0.42	8.49	2.26	18	2010					
RE*GARISN	R18-01*	R18-57I-A	24	0.013	112.63	112.50	306	0.0004	1.49	3.0	0.0012	0%		6.47		7.71		8.21		8.49	5.47	27	2010					
RE*GARISN	R18-57I-A	57I	24	0.013	112.50	112.40	19	0.0053	5.24	10.6	0.0012	0%		6.47		7.71		8.21		8.49	-2.13	OK	NE					
	Section*		24	0.013		3.11	2614	0.0012	2.49	5.0	0.0133	0%		6.47		7.71		8.21		8.49	3.44	15	2010					15
RE*ULID1/5	57I	57H	24	0.013	112.40	112.00	404	0.0010	2.27	4.6	0.0018	0%		6.47		7.71		8.21		8.49	3.88	21	2010					
RE*ULID1/5	57H	57G	24	0.013	112.00	111.50	403	0.0012	2.54	5.2	0.0018	0%		6.47		7.71		8.21		8.49	3.33	21	2010					
RE*ULID1/5	57G	57F	24	0.013	111.50	111.00	351	0.0014	2.72	5.5	0.0018	33% c5e-x	0.35	6.83	0.40	8.10	0.42	8.63	0.42	8.91	3.39	21	2010					
RE*ULID1/5	57F	57E	24	0.013	111.00	110.60	350	0.0011	2.44	4.9	0.0018	0%		6.83		8.10		8.63		8.91	3.96	21	2010					
RE*ULID1/5	57E	57D	24	0.013	110.60	110.00	400	0.0015	2.80	5.7	0.0018	0%		6.83		8.10		8.63		8.91	3.24	21	2010					
RE*ULID1/5	57D	57C	24	0.013	110.00	109.40	400	0.0015	2.80	5.7	0.0018	0%		6.83		8.10		8.63		8.91	3.24	21	2010					
RE*ULID1/5	57C	57B	24	0.013	109.40	109.30	130	0.0008	2.00	4.1	0.0018	0%		6.83		8.10		8.63		8.91	4.85	24	2010					
RE*ULID1/5	57B	57AA	24	0.013	109.30	108.90	217	0.0018	3.10	6.3	0.0018	0%		6.83		8.10		8.63		8.91	2.63	18	2010					
RE*ULID1/5	57AA	57A	24	0.013	108.90	108.50	268	0.0015	2.79	5.7	0.0018	0%		6.83		8.10		8.63		8.91	3.26	21	2010					
RE*ULID1/5	57A	57	24	0.013	108.50	106.40	500	0.0042	4.68	9.5	0.0018	0%		6.83		8.10		8.63		8.91	-0.57	OK	NE					
	Section		24	0.013		6.00	3423	0.0018	3.02	6.1	0.0018	0%		6.83		8.10		8.63		8.91	2.78	18	2010					18
TO ULID 1/5.#57																												

Task 250 Report:
KENT PLANNING ZONE - REROUTING ALTERNATIVE
20% I/I reduction effective in 2000

FACILITY	UP-STREAM MH #	DOWN-STREAM MH #	DIA. (IN)	Manning n	UP-STREAM INV ELEV	DOWN-STREAM INV ELEV	LENGTH (FT.)	SLOPE (FT/FT)	Vfull (FPS)	Cap. (MGD)	Herrera New Slope	Modification Origin of Flow Percent	2010 Design Flow Inflow (MGD)	2010 Design Flow Total (MGD)	2020 Design Flow Inflow (MGD)	2020 Design Flow Total (MGD)	2030 Design Flow Inflow (MGD)	2030 Design Flow Total (MGD)	2050 Design Flow Inflow (MGD)	2050 Design Flow Total (MGD)	Excess (+) (MGD)	2050 Parallel Pipe (in.)	Decade Exceeded	Surcharge: any negative value in "BW elev" Δ elev FULL pipe	Δ elev	Δ−Δfull	BW elev (ft)	Proposed Diameter (inches)
do not delete this line												25% mill-x	2.40	2.40	2.77	2.77	2.96	2.96	3.07	3.07			X					
RE*MILL	R18F-37A	R18F-37	27	0.013	444.60	442.00	440	0.0059	6.00	15.4	0.0149	100% mill-e	2.15	4.55	2.80	5.57	3.02	5.98	3.19	6.27	-9.13	OK	NE					
RE*MILL	R18F-37	R18F-36	21	0.013	442.00	434.70	428	0.0171	8.63	13.4	0.0149	0%		4.55		5.57		5.98		6.27	-7.12	OK	NE					
RE*MILL	R18F-36	R18F-35	21	0.013	434.70	428.90	335	0.0173	8.69	13.5	0.0149	0%		4.55		5.57		5.98		6.27	-7.22	OK	NE					
RE*MILL	R18F-35	R18F-34	21	0.013	428.90	423.00	340	0.0174	8.70	13.5	0.0149	0%		4.55		5.57		5.98		6.27	-7.24	OK	NE					
RE*MILL	R18F-34	R18F-33	21	0.013	423.00	417.00	358	0.0168	8.55	13.3	0.0149	0%		4.55		5.57		5.98		6.27	-7.00	OK	NE					
RE*MILL	R18F-33	R18F-32	21	0.013	417.00	411.00	358	0.0168	8.55	13.3	0.0149	0%		4.55		5.57		5.98		6.27	-7.00	OK	NE					
	Section		21	0.013		33.60	2259	0.0149	8.06	12.5	0.0149	0%		4.55		5.57		5.98		6.27	-6.24	OK	NE					OK
RE*MILL	R18F-32	R18F-31	24	0.013	411.00	408.50	408	0.0061	5.65	11.5	0.0060	0%		4.55		5.57		5.98		6.27	-5.19	OK	NE					
RE*MILL	R18F-31	R18F-30	24	0.013	408.50	406.70	307	0.0059	5.53	11.2	0.0060	0%		4.55		5.57		5.98		6.27	-4.94	OK	NE					
RE*MILL	R18F-30	R18F-29	24	0.013	406.70	404.80	320	0.0059	5.56	11.3	0.0060	0%		4.55		5.57		5.98		6.27	-5.01	OK	NE					
	Section		24	0.013		6.20	1035	0.0060	5.59	11.3	0.0060	0%		4.55		5.57		5.98		6.27	-5.06	OK	NE					OK
RE*MILL	R18F-29	R18F-28	21	0.013	404.80	400.50	359	0.0120	7.23	11.2	0.0519	12% mill-x	1.15	5.70	1.33	6.89	1.42	7.40	1.47	7.74	-3.48	OK	NE					
RE*MILL	R18F-28	R18F-27A	18	0.013	400.50	391.80	231	0.0377	11.57	13.2	0.0519	0%		5.70		6.89		7.40		7.74	-5.45	OK	NE					
RE*MILL	R18F-27A	R18F-27	18	0.013	391.80	388.20	80	0.0450	12.64	14.4	0.0519	0%		5.70		6.89		7.40		7.74	-6.67	OK	NE					
RE*MILL	R18F-27	R18F-26	18	0.013	388.20	371.10	379	0.0451	12.66	14.4	0.0519	0%		5.70		6.89		7.40		7.74	-6.69	OK	NE					
RE*MILL	R18F-26	R18F-25	18	0.013	371.10	348.40	367	0.0619	14.82	16.9	0.0519	0%		5.70		6.89		7.40		7.74	-9.16	OK	NE					
RE*MILL	R18F-25	R18F-24	18	0.013	348.40	334.30	318	0.0443	12.55	14.3	0.0519	0%		5.70		6.89		7.40		7.74	-6.57	OK	NE					
RE*MILL	R18F-24	R18F-23	18	0.013	334.30	309.00	405	0.0625	14.90	17.0	0.0519	0%		5.70		6.89		7.40		7.74	-9.25	OK	NE					
RE*MILL	R18F-23	R18F-22	18	0.013	309.00	278.20	395	0.0780	16.64	19.0	0.0519	0%		5.70		6.89		7.40		7.74	-11.23	OK	NE					
RE*MILL	R18F-22	R18F-21	18	0.013	278.20	263.00	195	0.0779	16.64	19.0	0.0519	0%		5.70		6.89		7.40		7.74	-11.23	OK	NE					
RE*MILL	R18F-21	R18F-20A	18	0.013	263.00	256.80	165	0.0376	11.56	13.2	0.0519	0%		5.70		6.89		7.40		7.74	-5.43	OK	NE					
RE*MILL	R18F-20A	R18F-20	18	0.013	256.80	252.30	90	0.0500	13.33	15.2	0.0519	0%		5.70		6.89		7.40		7.74	-7.45	OK	NE					
RE*MILL	R18F-20	R18F-19	18	0.013	252.30	238.80	292	0.0462	12.82	14.6	0.0519	0%		5.70		6.89		7.40		7.74	-6.87	OK	NE					
RE*MILL	R18F-19	R18F-18	18	0.013	238.80	216.90	347	0.0631	14.97	17.1	0.0519	0%		5.70		6.89		7.40		7.74	-9.33	OK	NE					
	Section		18	0.013		187.90	3623	0.0519	13.58	15.5	0.0519	0%		5.70		6.89		7.40		7.74	-7.74	OK	NE					OK
RE*MILL	R18F-18	R18F-17	21	0.013	216.90	213.00	290	0.0134	7.66	11.9	0.0442	0%		5.70		6.89		7.40		7.74	-4.14	OK	NE					
RE*MILL	R18F-17	R18F-16A	18	0.013	213.00	184.00	447	0.0649	15.18	17.3	0.0442	0%		5.70		6.89		7.40		7.74	-9.57	OK	NE					
RE*MILL	R18F-16A	R18F-16	18	0.013	184.00	182.70	14	0.0929	18.16	20.7	0.0442	0%		5.70		6.89		7.40		7.74	-12.97	OK	NE					
RE*MILL	R18F-16	R18F-15	18	0.013	182.70	174.60	118	0.0686	15.62	17.8	0.0442	0%		5.70		6.89		7.40		7.74	-10.07	OK	NE					
	Section		18	0.013		38.40	869	0.0442	12.53	14.3	0.0442	0%		5.70		6.89		7.40		7.74	-6.54	OK	NE					OK
RE*MILL	R18F-15	R18F-14	24	0.013	174.60	172.20	380	0.0063	5.74	11.6	0.0347	0%		5.70		6.89		7.40		7.74	-3.89	OK	NE					
RE*MILL	R18F-14	R18F-13	18	0.013	172.20	168.20	143	0.0280	9.97	11.4	0.0347	0%		5.70		6.89		7.40		7.74	-3.63	OK	NE					
RE*MILL	R18F-13	R18F-12	18	0.013	168.20	164.10	140	0.0293	10.20	11.6	0.0347	0%		5.70		6.89		7.40		7.74	-3.88	OK	NE					
RE*MILL	R18F-12	R18F-11	18	0.013	164.10	154.80	149	0.0624	14.89	17.0	0.0347	0%		5.70		6.89		7.40		7.74	-9.23	OK	NE					
RE*MILL	R18F-11	R18F-10	18	0.013	154.80	136.20	295	0.0631	14.97	17.1	0.0347	0%		5.70		6.89		7.40		7.74	-9.32	OK	NE					
	Section*		18	0.013		38.40	1107	0.0347	11.10	12.7	0.0347	0%		5.70		6.89		7.40		7.74	-4.92	OK	NE					OK
RE*MILL	R18F-10	R18F-09	21	0.013	136.20	126.30	439	0.0226	9.92	15.4	0.0226	0%		5.70		6.89		7.40		7.74	-7.65	OK	NE					
	Section*		21	0.013		9.90	439	0.0226	9.92	15.4	0.0226	0%		5.70		6.89		7.40		7.74	-7.65	OK	NE					OK
RE*MILL	R18F-09	R18F-07	30	0.013	126.30	125.00	465	0.0028	4.43	14.0	0.0024	22% mill-x	2.11	7.81	2.44	9.33	2.60	10.00	2.70	10.44	-3.59	OK	NE	0.72	1.30	0.58	0.53	
RE*MILL	R18F-07	R18F-06	30	0.013	125.00	124.40	424	0.0014	3.15	10.0	0.0024	0%		7.81		9.33		10.00		10.44	0.46	9	2030	0.65	0.60	-0.05	-0.05	ignore
												-100% MILL #6	-7.81		-9.33		-10.00		-10.44				X					
RE*MILL	R18F-06	R18F-05	30	0.013	124.40	123.40	483	0.0021	3.81	12.1	0.0024	25% mill-x	2.40	2.40	2.77	2.77	2.96	2.96	3.07	3.07	-9.00	OK	NE					
RE*MILL	R18F-05	R18F-04	30	0.013	123.40	122.00	547	0.0026	4.24	13.4	0.0024	0%		2.40		2.77		2.96		3.07	-10.35	OK	NE					
RE*MILL	R18F-04	R18F-03	30	0.013	122.00	120.60	540	0.0026	4.27	13.5	0.0024	0%		2.40		2.77		2.96		3.07	-10.44	OK	NE					
RE*MILL	R18F-03	R18F-02C	30	0.013	120.60	120.40	93	0.0022	3.88	12.3	0.0024	0%		2.40		2.77		2.96		3.07	-9.23	OK	NE					
RE*MILL	R18F-02C	R18F-02B	30	0.013	120.40	119.30	515	0.0021	3.87	12.3	0.0024	0%		2.40		2.77		2.96		3.07	-9.19	OK	NE					
RE*MILL	R18F-02B	R18F-02A	30	0.013	119.30	118.80	182	0.0027	4.39	13.9	0.0024	0%		2.40		2.77		2.96		3.07	-10.84	OK	NE					
RE*MILL	R18F-02A	R18F-02	30	0.013	118.80	118.70	67	0.0015	3.24	10.3	0.0024	0%		2.40		2.77		2.96		3.07	-7.18	OK	NE					
RE*MILL	R18F-02	R18F-01	30	0.013	118.70	117.50	375	0.0032	4.74	15.0	0.0024	0%		2.40		2.77		2.96		3.07	-11.94	OK	NE					
	Section*		30	0.013		8.80	3691	0.0024	4.09	13.0	0.0024	0%		2.40		2.77		2.96		3.07	-9.88	OK	NE					OK

Task 250 Report:
KENT PLANNING ZONE - REROUTING ALTERNATIVE
20% I/I reduction effective in 2000

FACILITY	UP-STREAM MH #	DOWN-STREAM MH #	DIA. (IN)	Manning n	UP-STREAM INV ELEV	DOWN-STREAM INV ELEV	LENGTH (FT.)	SLOPE (FT/FT)	Vfull (FPS)	Cap. (MGD)	Herrera New Slope	Modification Origin of Flow Percent	2010 Design Flow Inflow (MGD)	2010 Design Flow Total (MGD)	2020 Design Flow Inflow (MGD)	2020 Design Flow Total (MGD)	2030 Design Flow Inflow (MGD)	2030 Design Flow Total (MGD)	2050 Design Flow Inflow (MGD)	2050 Design Flow Total (MGD)	Excess (+) (MGD)	2050 Parallel Pipe (in.)	Decade Exceeded	Surcharge: any negative value in "BW elev" Δ elev FULL pipe	Δ elev	Δ−Δfull	BW elev (ft)	Proposed Diameter (inches)
RE*ULID1/5	R18F-01	75	30	0.013	117.50	117.60	43	-0.0023			0.0015	0%		2.40		2.77		2.96		3.07	3.07	21	2010	0.01	-0.10	-0.11	-0.11	ignore
RE*ULID1/5	75	74AA	30	0.013	117.60	117.50	11	0.0091	7.99	25.3	0.0015	0%		2.40		2.77		2.96		3.07	-22.22	OK	NE					
RE*ULID1/5	74AA	74	30	0.013	117.50	117.40	109	0.0009	2.54	8.0	0.0015	0%		2.40		2.77		2.96		3.07	-4.97	OK	NE					
RE*ULID1/5	74	73	30	0.013	117.40	116.80	348	0.0017	3.48	11.0	0.0015	0%		2.40		2.77		2.96		3.07	-7.95	OK	NE					
RE*ULID1/5	73	72	30	0.013	116.80	116.10	400	0.0018	3.50	11.1	0.0015	0%		2.40		2.77		2.96		3.07	-8.02	OK	NE					
RE*ULID1/5	72	71	30	0.013	116.10	115.60	315	0.0016	3.34	10.6	0.0015	0%		2.40		2.77		2.96		3.07	-7.50	OK	NE					
RE*ULID1/5	71	70	30	0.013	115.60	115.20	270	0.0015	3.22	10.2	0.0015	0%		2.40		2.77		2.96		3.07	-7.14	OK	NE					
RE*ULID1/5	70	69	30	0.013	115.20	114.40	494	0.0016	3.37	10.7	0.0015	0%		2.40		2.77		2.96		3.07	-7.61	OK	NE					
RE*ULID1/5	69	68	30	0.013	114.40	113.70	485	0.0014	3.18	10.1	0.0015	0%		2.40		2.77		2.96		3.07	-7.01	OK	NE					
RE*ULID1/5 @SR167	68	67	30	0.013	113.70	113.50	123	0.0016	3.38	10.7	0.0015	0%		2.40		2.77		2.96		3.07	-7.62	OK	NE					
Section			30	0.013		4.00	2598	0.0015	3.29	10.4	0.0015	0%		2.40		2.77		2.96		3.07	-7.34	OK	NE					OK
RE*ULID1/5	67	66	27	0.013	113.50	113.00	296	0.0017	3.21	8.2	0.0016	0%		2.40		2.77		2.96		3.07	-5.16	OK	NE					
RE*ULID1/5	66	65	27	0.013	113.00	112.40	412	0.0015	2.98	7.6	0.0016	0% xval-x		2.40		2.77		2.96		3.07	-4.57	OK	NE					
RE*ULID1/5	65	64	27	0.013	112.40	111.70	467	0.0015	3.02	7.8	0.0016	0%		2.40		2.77		2.96		3.07	-4.68	OK	NE					
RE*ULID1/5	64	63	27	0.013	111.70	111.20	258	0.0019	3.44	8.8	0.0016	0%		2.40		2.77		2.96		3.07	-5.75	OK	NE					
RE*ULID1/5	63	62	27	0.013	111.20	110.50	404	0.0017	3.25	8.3	0.0016	8% mill-x	0.77	3.17	0.89	3.65	0.95	3.90	0.98	4.06	-4.29	OK	NE					
RE*ULID1/5	62	61	27	0.013	110.50	110.00	322	0.0016	3.08	7.9	0.0016	0%		3.17		3.65		3.90		4.06	-3.84	OK	NE					
Section			27	0.013		3.50	2159	0.0016	3.14	8.1	0.0016	0%		3.17		3.65		3.90		4.06	-4.01	OK	NE					OK
RE*ULID1/5	61	60	30	0.013	110.00	109.20	469	0.0017	3.46	11.0	0.0013	0%		3.17		3.65		3.90		4.06	-6.91	OK	NE					
RE*ULID1/5	60	59	30	0.013	109.20	108.70	430	0.0012	2.86	9.0	0.0013	0%		3.17		3.65		3.90		4.06	-4.99	OK	NE					
RE*ULID1/5	59	58	30	0.013	108.70	108.10	504	0.0012	2.89	9.2	0.0013	0%		3.17		3.65		3.90		4.06	-5.10	OK	NE					
RE*ULID1/5	58	57	30	0.013	108.10	107.60	419	0.0012	2.89	9.2	0.0013	0%		3.17		3.65		3.90		4.06	-5.11	OK	NE					
Section			30	0.013		2.40	1822	0.0013	3.04	9.6	0.0013	0%		3.17		3.65		3.90		4.06	-5.58	OK	NE					OK
RE*ULID1/5	57	R18-30	42	0.013	106.60	106.40	404	0.0005	2.33	14.5	0.0004	100% ULID1/5 57A	6.83	9.99	8.10	11.76	8.63	12.53	8.91	12.96	-1.52	OK	NE	0.16	0.20	0.04	-0.02	
RE*ULID1/5	56	55	42	0.013	106.40	106.30	393	0.0003	1.67	10.4	0.0004	0%		9.99		11.76		12.53		12.96	2.58	24	2020	0.16	0.10	-0.06	-0.06	ignore
RE*ULID1/5	55	54	42	0.013	106.30	106.10	432	0.0005	2.26	14.0	0.0004	0%		9.99		11.76		12.53		12.96	-1.04	OK	NE					
RE*ULID1/5	54	53	42	0.013	106.10	105.90	442	0.0005	2.23	13.8	0.0004	0%		9.99		11.76		12.53		12.96	-0.88	OK	NE					
Section*			42	0.013		0.70	1671	0.0004	2.15	13.3	0.0004	0%		9.99		11.76		12.53		12.96	-0.36	OK	NE					OK
RE*ULID1/5	53	52	42	0.013	105.90	103.70	436	0.0050	7.45	46.2	0.0050	0%		9.99		11.76		12.53		12.96	-33.27	OK	NE					
Section*			42	0.013		2.20	436	0.0050	7.45	46.2	0.0050	0%		9.99		11.76		12.53		12.96	-33.27	OK	NE					OK
RE*ULID1/2	52	51	72	0.012	103.70	103.60	353	0.0003	2.74	50.0	0.0003	100% KXVAL	20.27	30.26	26.33	38.09	28.04	40.57	28.76	41.73	-8.23	OK	NE					
																			140.78	140.78 check								

*RWSP pipe or section data revised.

APPENDIX 250-J

SOOS PLANNING ZONE ALTERNATIVES WITH 20% I/I REDUCTION EFFECTIVE IN 2000

Soos Planning Zone Alternatives
With 20% I/I Reduction

	Flowrate (mgd)	Total Head TDH (ft)	Upstream Elevation (ft)	Downstream or High Point Elevation (ft)	Downstream Invert Elevation (ft)	Static Head (ft)	Forcemain Diameter (inches)	Forcemain Length (ft)	HDR $ ($/LF)	Forcemain headloss w/ C=140 (ft)	Forcemain Velocity (fps)	Gravity Main Diameter (inches)	Gravity Main Length (ft)	calc'd slope	design slope	HDR $ ($/LF)	Preliminary Estimated Conveyance Cost
	ALTERNATIVE 1		Criteria: TDH >200 ft & 8 fps velocity							140					0.013		
PS B	2.6	187	300	460	370		15			26.8	3.33						$2,200,000
Fm B		171				160	18	11,600	$418	11.0	2.31						$4,848,800
Gravity B		163					24			2.7	1.30	15	6,900	0.0130	0.0130	$398	$2,746,200
																	$9,795,000
PS C	25.4	202	360	490	410		21			72.5	9.41						$6,000,000
Fm C-parallel	14.6	168				130	24	6,800	$491	37.9	7.20						$3,338,800
Gravity C		151					27			21.3	5.69	24	6,500	0.0123	0.0120	$491	$3,191,500
	10.8																$12,530,300
PT D																	
Fm D																	
Gravity D																	
PS E	7.0	284	360	490	410		12			154.5	6.47						$2,000,000
Fm E-parallel	3.3	182				130	15	15,100	$398	52.2	4.14						$6,009,800
Gravity E-parallel		151					18			21.5	2.87						
	3.7																$8,009,800
PS F	10.0	460	390	470	360		12			430.3	8.34						$2,200,000
Fm F-parallel	4.2	175				30	15	26,300	$398	145.3	5.34						$10,467,400
Gravity F-parallel		90		(Low Pt @ 340)			18			59.8	3.71						
	5.8																$12,667,400
PS G: no change																	
PS H	4.2	225	533	581	357		8			49.3	11.73						$1,800,000
Fm H	2.6	193				176	10	1,000	$348	16.7	7.51						$348,000
Gravity G-parallel		183					12			6.9	5.21	18	32,758	0.0068	0.00155	$418	$13,692,844
	1.6																$15,840,844
		5	pump stations		new pump stations:	5		60,800					46,158		ALTERNATIVE 1		**$58,840,000**
	ALTERNATIVE 2		Criteria: TDH >200 ft & 8 fps velocity														
PS B	23.8	214	300	460	370		30			53.6	7.50						$10,000,000
Fm B		194				160	33	11,600	$645	33.7	6.19						$7,482,000
Gravity B		182					36			22.1	5.20	30	6,900	0.0130	0.0130	$561	$3,870,900
																	$21,352,900
PS C	4.3	244	360	490	410		12			113.9	8.44						
Fm C		168				130	15	6,800	$398	38.5	5.40						$2,706,400
Gravity C		146					18			15.8	3.75	15	6,500	0.0123	0.0120	$398	$2,587,000
																	$5,293,400
													USE EXISTING LS #10 & PIPES				-$5,293,400
PS D	21.1	181	360	450	300		21			90.6	13.60						$8,400,000
Fm D		137				90	24	4,300	$491	47.3	10.41						$2,111,300
Gravity D		117					27			26.7	8.23	24	6,300	0.0238	0.0230	$491	$3,093,300
																	$13,604,600
PT E	14.2		367	325													
Fm E																	
Gravity E												39	10,000	0.0325	0.00075	$735	$7,350,000
													change due to topography				$7,350,000
PS F	10.0	378	390	470	360		10			297.9	12.01						$2,200,000
Fm F-parallel	4.2	203				80	12	7,500	$363	122.7	8.34						$2,722,500
Gravity F		121					15			41.4	5.34	21	11,000	0.0100	0.0100	$439	$4,829,000
	5.8												change due to topography				$9,751,500
PS G: no change																	
PS H	4.2	224	533	581	357		8			48.0	11.55		-				$1,800,000
Fm H	2.6	192				176	10	1,000	$348	16.2	7.39						$348,000
Gravity H-parallel		183					12			6.7	5.13	18	32,758	0.0068	0.00155	$418	$13,692,844
	1.64																$15,840,844
		5	pump stations		new pump stations:	4		31,200					73,458		ALTERNATIVE 2		**$67,900,000**

Basins and 2050 flow (mgd) routed through each pump station

ALTERNATIVE 1

aub3-ne	2.03	sss-x	1.99	sss-x	0.35			ls-11n	2.78	lks-x	2.21	ls-11s	4.25
		mill-q	0.26	scrk-x	6.60					ls-15	7.79		
		ssm-q	0.39	ls-14	0.78								
				sss-ne	0.13								
				jenk-r	0.55								
PS C	25.4			PS E	7.0			PS H	4.25				
PS B	2.6			PS F	9.99								
PT A	30.1	**PS B**	2.6	**PS C**	25.4	**PT D**		**PS E**	7.0	**PS F**	10.0	**PS H**	4.2
mill-e	3.19	through Mill Creek Interceptor											
sss-sw	1.22	through Auburn											

ALTERNATIVE 2

aub3-ne	2.03	sss-x	1.99	scrk-x	4.29	sss-x	0.35			lks-x	2.21	ls-11s	4.25
		mill-q	0.26			scrk-x	2.31			ls-15	7.79		
		ssm-q	0.39			ls-14	0.78						
						sss-ne	0.13						
						jenk-r	0.55						
						ls-11n	2.78						
PS B	23.8							PS H	4.2				
PS C	4.3	PT D	21.14			PT E	14.24	PS F	9.99				
PT A	30.1	**PS B**	23.8	**PS C**	4.3	**PT D**	21.1	**PT E**	14.2	**PS F**	10.0	**PS H**	4.2
mill-e	3.19	through Mill Creek Interceptor											
sss-sw	1.22	through Auburn											

Soos Planning Zone
TASK 240 ALTERNATIVES
With 20% I/I Reduction

Soos Planning Zone Alternatives
With 20% I/I Reduction

	Flowrate (mgd)	Total Head TDH (ft)	Upstream Elevation (ft)	Downstream or High Point Elevation (ft)	Downstream Invert Elevation (ft)	Static Head (ft)	Forcemain Diameter (inches)	Forcemain Length (ft)	HDR $ ($/LF)	Forcemain headloss w/ C=140 (ft)	Forcemain Velocity (fps)	Gravity Main Diameter (inches)	Gravity Main Length (ft)	calc'd slope	design slope	HDR $ ($/LF)	Preliminary Estimated Conveyance Cost
	ALTERNATIVE 3		Criteria: TDH >200 ft & 8 fps velocity														
PS B	2.6	193	300	450	360		12			43.1	5.20						$2,200,000
Fm B		165				150	15	6,300	$398	14.5	3.33						$2,507,400
Gravity B		156					18			6.0	2.31	12	4,300	0.0209	0.0200	$363	$1,560,900
																	$6,268,300
PS C	4.3	244	360	490	410		12			113.9	8.44						
Fm C		168				130	15	6,800	$398	38.5	5.40						$2,706,400
Gravity C		146					18			15.8	3.75	15	6,500	0.0123	0.0120	$398	$2,587,000
																	$5,293,400
														USE EXISTING LS #10 & PIPES			-$5,293,400
PS D	23.8	208	360	480	360		30			87.7	7.50						$10,000,000
Fm D		175				120	33	19,000	$645	55.2	6.19						$12,255,000
Gravity D		156					36			36.1	5.20	27	6,700	0.0179	0.0170	$510	$3,417,000
																	$25,672,000
PT E	14.2		367	325													
Fm E																	
Gravity E												39	10,000	0.0325	0.00075	$735	$7,350,000
														change due to topography			$7,350,000
PS F	10.0	378	390	470	360		10			297.9	12.01						$2,200,000
Fm F-parallel	4.2	203				80	12	7,500	$363	122.7	8.34						$2,722,500
Gravity F		121					15			41.4	5.34	24	11,000	0.0100	0.0052	$491	$5,401,000
	5.8													change due to topography			$10,323,500
PS G: no change																	
PS H	4.2	225	533	581	357		8			49.3	11.73		-				$1,800,000
Fm H	2.6	193				176	10	1,000	$348	16.7	7.51						$348,000
Gravity H-parallel		183					12			6.9	5.21	18	32,758	0.0068	0.00155	$418	$13,692,844
	1.6																$15,840,844
		5	pump stations		new pump stations:	4		40,600					71,258		ALTERNATIVE 3		**$65,450,000**
	ALTERNATIVE 4		Criteria: TDH >200 ft & 8 fps velocity														
PS B	2.6	187	300	460	370		15			26.8	3.33						$2,200,000
Fm B		171				160	18	11,600	$418	11.0	2.31						$4,848,800
Gravity B		165					21			5.2	1.70	15	6,900	0.0130	0.0130	$398	$2,746,200
																	$9,795,000
PS C	4.3	244	360	490	410		12			113.9	8.44						
Fm C		168				130	15	6,800	$398	38.5	5.40						$2,706,400
Gravity C		146					18			15.8	3.75	15	6,500	0.0123	0.0120	$398	$2,587,000
																	$5,293,400
														USE EXISTING LS #10 & PIPES			-$5,293,400
PS D	21.1	238	360	480	360		27			117.8	8.23						$8,400,000
Fm D		191				120	30	19,000	$561	70.6	6.66						$10,659,000
Gravity D		164					33			44.4	5.51	27	6,700	0.0179	0.0170	$510	$3,417,000
																	$22,476,000
PT E	14.2		367	325													
Fm E																	
Gravity E												39	10,000	0.0325	0.00075	$735	$7,350,000
														change due to topography			$7,350,000
PS F	10.0	378	390	470	360		10			297.9	12.01						$2,200,000
Fm F-parallel	4.2	203				80	12	7,500	$363	122.7	8.34						$2,722,500
Gravity F		121					15			41.4	5.34	24	11,000	0.0100	0.0052	$491	$5,401,000
	5.8													change due to topography			$10,323,500
PS G: no change																	
PS H	4.2	225	533	581	357		8			49.3	11.73		-				$1,800,000
Fm H	2.6	193				176	10	1,000	$348	16.7	7.51						$348,000
Gravity H-parallel		183					12			6.9	5.21	18	32,758	0.0068	0.00155	$418	$13,692,844
	1.6																$15,840,844
		5	pump stations		new pump stations:	4		45,900					73,858		ALTERNATIVE 4		**$65,790,000**

Basins and 2050 flow (mgd) routed through each pump station

ALTERNATIVE 3

aub3-ne	2.03	sss-x	1.99	scrk-x	4.29	sss-x	0.35			lks-x	2.21	ls-11s	4.25
		mill-q	0.26			scrk-x	2.31			ls-15	7.79		
		ssm-q	0.39			ls-14	0.78						
						sss-ne	0.13						
						jenk-r	0.55						
						ls-11n	2.78						
PS C	4.3					PS B	2.64	PS H	4.2				
PT D	23.78					PT E	14.24	PS F	9.99				
PT A	30.1	**PS B**	2.6	**PS C**	4.3	**PT D**	23.8	**PT E**	14.2	**PS F**	10.0	**PS H**	4.2
mill-e	3.19	through Mill Creek Interceptor											
sss-sw	1.22	through Auburn											

ALTERNATIVE 4

aub3-ne	2.03	sss-x	1.99	scrk-x	4.29	sss-x	0.35			lks-x	2.21	ls-11s	4.25
		mill-q	0.26			scrk-x	2.31			ls-15	7.79		
		ssm-q	0.39			ls-14	0.78						
						sss-ne	0.13						
						jenk-r	0.55						
						ls-11n	2.78						
PS C	4.3												
PS B	2.6							PS H	4.2				
PT D	21.14					PT E	14.24	PS F	9.99				
PT A	30.1	**PS B**	2.6	**PS C**	4.3	**PT D**	21.1	**PT E**	14.2	**PS F**	10.0	**PS H**	4.2
mill-e	3.19	through Mill Creek Interceptor											
sss-sw	1.22	through Auburn											

Soos Planning Zone
TASK 240 ALTERNATIVES
With 20% I/I Reduction

APPENDIX 250-K

PRELIMINARY COST ESTIMATES

Task 250 Report:
Summary of Preliminary Cost Estimates for Alternatives
(Does not include cost to regionalize local facilities)

	with I/I degradation of 7% per decade		with I/I limited to 1,100 gpad for new construction			with 20% I/I reduction		
Alternative	Pipe Length (ft)	Estimated Cost (million dollars)	Pipe Length (ft)	Estimated Cost (million dollars)	Cost Reduction1 (million dollars)	Pipe Length (ft)	Estimated Cost (million dollars)	Cost Reduction1 (million dollars)
Total Project Cost								
AUBURN PLANNING ZONE								
Parallel	69,000	$57	57,100	$42	$15	58,500	$44	$13
Rerouting	55,800	#REF!	49,800	#REF!	#REF!	49,800	#REF!	#REF!
KENT PLANNING ZONE								
Parallel	53,600	$59	47,300	$44	$15	51,500	$46	$13
Rerouting	36,200	$52	35,200	$51	$1	34,800	$51	$1
SOOS PLANNING ZONE								
Alternative 1	107,000	$97	107,000	$86	$11	107,000	$88	$8
Alternative 2	91,400	$114	91,400	$102	$12	91,400	$102	$12
Alternative 3	98,600	$105	98,600	$98	$8	98,600	$98	$7
Alternative 4	106,500	$108	106,500	$98	$10	106,500	$99	$9
Estimated Construction Cost								
AUBURN PLANNING ZONE								
Parallel	69,000	$38	57,100	$28	$10	58,500	$29	$9
Rerouting	55,800	$39	49,800	$30	$9	49,800	$32	$7
KENT PLANNING ZONE								
Parallel	53,600	$40	47,300	$29	$10	51,500	$31	$9
Rerouting	36,200	$35	35,200	$34	$1	34,800	$34	$1
SOOS PLANNING ZONE								
Alternative 1	107,000	$64	107,000	$57	$7	107,000	$59	$6
Alternative 2	91,400	$76	91,400	$68	$8	91,400	$68	$8
Alternative 3	98,600	$70	98,600	$65	$5	98,600	$65	$5
Alternative 4	106,500	$72	106,500	$65	$7	106,500	$66	$6

Task 250 Report: Preliminary Estimate of Costs
Auburn Planning Zone Parallel Alternative

		with 7% per decade I/I degradation only		with I/I limited to 1,100 gpad for new construction		with 20% I/I reduction	
Diameter (inches)	Unit Price ($/lf)	Length (ft)	Estimated Cost (million dollars)	Length (ft)	Estimated Cost (million dollars)	Length (ft)	Estimated Cost (million dollars)
10	$348	-		-		-	
12	$363	1,846	$0.67	-		-	
15	$398	-		4,278	$1.70	-	
18	$418	-		1,768	$0.74	-	
21	$439	-		7,170	$3.15	18,313	$8.04
24	$491	11,448	$5.62	15,628	$7.67	16,538	$8.12
27	$510	34,601	$17.65	23,919	$12.20	7,269	$3.71
30	$561	-		-		15,927	$8.94
36	$645	15,927	$10.27	4,297	$2.77	490	$0.32
42	$735	5,166	$3.80	-		-	
48	$829	-		-		-	
54	$935	-		-		-	
60	$1,118	-		-		-	
66	$1,212	-		-		-	
72	$1,334	-		-		-	
78	$1,459	-		-		-	
84	$1,620	-		-		-	
90	$1,792	-		-		-	
Estimated Construction Cost (million dollars)		69,000	$38.0	57,100	$28.2	58,500	$29.1
Total Project Cost (million dollars)			$57		$42		$44

Task 250 Report: Preliminary Estimate of Costs
Auburn Planning Zone Rerouting Alternative

		with 7% per decade I/I degradation only		with I/I limited to 1,100 gpad for new construction		with 20% I/I reduction	
Diameter (inches)	Unit Price ($/lf)	Length (ft)	Estimated Cost (million dollars)	Length (ft)	Estimated Cost (million dollars)	Length (ft)	Estimated Cost (million dollars)
10	$348	-		-		-	
12	$363	-		-		-	
15	$398	-		4,297	$1.71	4,297	$1.71
18	$418	4,297	$1.80	-		-	
21	$439	-		6,896	$3.03	-	
24	$491	-		5,000	$2.46	5,000	$2.46
27	$510	6,896	$3.52	12,000	$6.12	18,896	$9.64
30	$561	17,000	$9.54	-		-	
36	$645	-		6,300	$4.06	6,300	$4.06
42	$735	9,151	$6.73	2,851	$2.10	2,851	$2.10
48	$829	-		12,500	$10.36	-	
54	$935	18,500	$17.30	-		12,500	$11.69
60	$1,118	-		-		-	
66	$1,212	-		-		-	
72	$1,334	-		-		-	
78	$1,459	-		-		-	
84	$1,620	-		-		-	
90	$1,792	-		-		-	
Estimated Construction Cost (million dollars)		55,800	$38.9	49,800	$29.8	49,800	$31.7
Total Project Cost (million dollars)			#REF!		#REF!		#REF!

Task 250 Report: Preliminary Estimate of Costs
Kent Planning Zone Parallel Alternative

		with 7% per decade I/I degradation only		with I/I limited to 1,100 gpad for new construction		with 20% I/I reduction	
Diameter (inches)	Unit Price ($/lf)	Length (ft)	Estimated Cost (million dollars)	Length (ft)	Estimated Cost (million dollars)	Length (ft)	Estimated Cost (million dollars)
10	$348	235	$0.08	589	$0.20	858	$0.30
12	$363	2,453	$0.89	-		6,892	$2.50
15	$398	-		4,314	$1.72	4,362	$1.74
18	$418	1,306	$0.55	9,776	$4.09	6,720	$2.81
21	$439	16,962	$7.45	2,614	$1.15	5,212	$2.29
24	$491	2,614	$1.28	2,598	$1.28	-	
27	$510	2,598	$1.32	1,822	$0.93	3,981	$2.03
30	$561	3,981	$2.23	2,159	$1.21	-	
36	$645	-		-		-	
42	$735	-		8,391	$6.17	1,671	$1.23
48	$829	1,671	$1.39	15,059	$12.48	21,779	$18.05
54	$935	-		-		-	
60	$1,118	21,779	$24.35	-		-	
66	$1,212	-		-		-	
72	$1,334	-		-		-	
78	$1,459	-		-		-	
84	$1,620	-		-		-	
90	$1,792	-		-		-	
Estimated Construction Cost (million dollars)		53,600	$39.5	47,300	$29.2	51,500	$31.0
Total Project Cost (million dollars)			$59		$44		$46

Task 250 Report: Preliminary Estimate of Costs
Kent Planning Zone Rerouting Alternative

		with 7% per decade I/I degradation only		with I/I limited to 1,100 gpad for new construction		with 20% I/I reduction	
Diameter (inches)	Unit Price ($/lf)	Length (ft)	Estimated Cost (million dollars)	Length (ft)	Estimated Cost (million dollars)	Length (ft)	Estimated Cost (million dollars)
10	$348	-		-			
12	$363	858	$0.31	589	$0.21	202	$0.07
15	$398	725	$0.29	2,614	$1.04	2,614	$1.04
18	$418	2,614	$1.09	-		3,423	$1.43
21	$439	-		3,423	$1.50	-	
24	$491	8,223	$4.04	4,800	$2.36	4,800	$2.36
27	$510	-		-		-	
30	$561	-		3,800	$2.13	-	
36	$645	3,800	$2.45	-		3,800	$2.45
42	$735	-		-		-	
48	$829	-		-		-	
54	$935	-		-		-	
60	$1,118	-		-		-	
66	$1,212	-		-		-	
72	$1,334	20,000	$26.68	20,000	$26.68	20,000	$26.68
78	$1,459	-		-		-	
84	$1,620	-		-		-	
90	$1,792	-		-		-	
Estimated Construction Cost (million dollars)		36,200	$34.9	35,200	$33.9	34,800	$34.0
Project Cost (million dollars)			$52		$51		$51

Task 250 Report:
Preliminary Cost Estimate for Soos Planning Zone Alternative 1
(Does not include cost to regionalize local facilities)

		with 7% per decade I/I degradation only		with I/I limited to 1,100 gpad for new construction		with 20% I/I reduction	
Diameter (inches)	Unit Price ($/lf)	Length (ft)	Estimated Cost (million dollars)	Length (ft)	Estimated Cost (million dollars)	Length (ft)	Estimated Cost (million dollars)
10	$348	-		1,000	$0.4	1,000	$0.4
12	$363	1,000	$0.36	6,900	$2.5	-	
15	$398	6,900	$2.75	53,000	$21.1	48,300	$19.2
18	$418	53,000	$22.15	32,758	$13.7	44,358	$18.5
21	$439	32,758	$14.38	-		-	
24	$491	-		13,300	$6.5	13,300	$6.5
27	$510	13,300	$6.78	-		-	
30	$561	-		-		-	
36	$645	-		-		-	
42	$735	-		-		-	
48	$829	-		-		-	
54	$935	-		-		-	
60	$1,118	-		-		-	
66	$1,212	-		-		-	
72	$1,334	-		-		-	
		107,000	$46.4	107,000	$44.2	107,000	$44.6
Proposed Pump Stations		5	$18.0	5	$13.1	5	$14.2
Estimated Construction Cost (million dollars)			$64.4		$57.3		$58.8
Total Project Cost (million dollars)			$97		$86		$88

Task 250 Report:
Preliminary Cost Estimate for Soos Planning Zone Alternative 2
(Does not include cost to regionalize local facilities)

		with 7% per decade I/I degradation only		with I/I limited to 1,100 gpad for new construction		with 20% I/I reduction	
Diameter (inches)	Unit Price ($/lf)	Length (ft)	Estimated Cost (million dollars)	Length (ft)	Estimated Cost (million dollars)	Length (ft)	Estimated Cost (million dollars)
10	$348	-		1,000	$0.4	1,000	$0.4
12	$363	1,000	$0.36	7,500	$2.7	7,500	$2.7
15	$398	7,500	$2.99	-		-	
18	$418	-		32,758	$13.7	32,758	$13.7
21	$439	32,758	$14.38	11,000	$4.8	11,000	$4.8
24	$491	-		6,300	$3.1	10,600	$5.2
27	$510	17,300	$8.82	4,300	$2.2	-	
30	$561	11,200	$6.28	6,900	$3.9	6,900	$3.9
36	$645	11,600	$7.48	11,600	$7.5	11,600	$7.5
42	$735	10,000	$7.35	10,000	$7.4	10,000	$7.4
48	$829	-		-		-	
54	$935	-		-		-	
60	$1,118	-		-		-	
66	$1,212	-		-		-	
72	$1,334	-		-		-	
		91,400	$47.7	91,400	$45.6	91,400	$45.5
Pump Stations		4	$28.0	4	$22.4	4	$22.4
Estimated Construction Cost (million dollars)			$75.7		$68.0		$67.9
Total Project Cost (million dollars)			$114		$102		$102

Task 250 Report:
Preliminary Cost Estimate for Soos Planning Zone Alternative 3
(Does not include cost to regionalize local facilities)

		with 7% per decade I/I degradation only		with I/I limited to 1,100 gpad for new construction		with 20% I/I reduction	
Diameter (inches)	Unit Price ($/lf)	Length (ft)	Estimated Cost (million dollars)	Length (ft)	Estimated Cost (million dollars)	Length (ft)	Estimated Cost (million dollars)
10	$348	-		1,000	$0.4	1,000	$0.4
12	$363	5,300	$1.92	11,800	$4.3	11,800	$4.3
15	$398	13,800	$5.49	6,300	$2.5	6,300	$2.5
18	$418	-		32,758	$13.7	32,758	$13.7
21	$439	32,758	$14.38	-		-	
24	$491	-		11,000	$5.4	11,000	$5.4
27	$510	11,000	$5.61	6,700	$3.4	6,700	$3.4
30	$561	6,700	$3.76	-		-	
36	$645	19,000	$12.26	19,000	$12.3	19,000	$12.3
42	$735	10,000	$7.35	10,000	$7.4	10,000	$7.4
48	$829	-		-		-	
54	$935	-		-		-	
60	$1,118	-		-		-	
66	$1,212	-		-		-	
72	$1,334	-		-		-	
		98,600	$50.8	98,600	$49.3	98,600	$49.3
Pump Stations		4	$19.5	4	$15.9	4	$16.2
Estimated Construction Cost (million dollars)			$70.3		$65.2		$65.5
Total Project Cost (million dollars)			$105		$98		$98

Task 250 Report:
Preliminary Cost Estimate for Soos Planning Zone Alternative 4
(Does not include cost to regionalize local facilities)

Diameter (inches)	Unit Price ($/lf)	with 7% per decade I/I degradation only		with I/I limited to 1,100 gpad for new construction		with 20% I/I reduction	
		Length (ft)	Estimated Cost (million dollars)	Length (ft)	Estimated Cost (million dollars)	Length (ft)	Estimated Cost (million dollars)
10	$348	-		1,000	$0.4	1,000	$0.4
12	$363	1,000	$0.36	14,400	$5.2	7,500	$2.7
15	$398	14,400	$5.73	11,600	$4.6	6,900	$2.8
18	$418	11,600	$4.85	32,758	$13.7	44,358	$18.5
21	$439	32,758	$14.38	-		-	
24	$491	-		11,000	$5.4	11,000	$5.4
27	$510	17,700	$9.03	6,700	$3.4	6,700	$3.4
30	$561	-		19,000	$10.7	19,000	$10.7
36	$645	19,000	$12.26	-		-	
42	$735	10,000	$7.35	10,000	$7.4	10,000	$7.4
48	$829	-		-		-	
54	$935	-		-		-	
60	$1,118	-		-		-	
66	$1,212	-		-		-	
72	$1,334	-		-		-	
		106,500	$54.0	106,500	$50.7	106,500	$51.2
Pump Stations		4	$18.0	4	$14.3	4	$14.6
Estimated Construction Cost (million dollars)			$72.0		$65.0		$65.8
Total Project Cost (million dollars)			$108		$98		$99

APPENDIX 250-L

COST MODEL CONSTRUCTION COST ESTIMATES

KING COUNTY CONVEYANCE SYSTEM IMPROVEMENTS MILL CREEK/GREEN RIVER SUBREGIONAL PLANNING AREA ESA/HCP OVERLAY MEMORANDUM

PURPOSE

The purpose of this memorandum is to provide an overview of Endangered Species Act (ESA) regulations and the likely implications for Conveyance System Improvement (CSI) projects in the Mill Creek Basin. In addition, the memorandum describes the areas of known and probable endangered species habitat. Issues related to construction and operation of the conveyance system alignment alternatives will be outlined, as well as any other special considerations that should be taken into account for CSI planning.

ESA OVERVIEW

Existing data sources have been consulted for the locations of known endangered species habitat. These sources include:

- King County GIS databases (2000).
- A Catalog of Washington Streams and Salmon Utilization: Volume 1, Puget Sound Region (WDF Publication)(1975).
- State Salmon and Steelhead Stock Inventory (1994).
- Habitat Limiting Factors and Reconnaissance Assessment Reports, WRIAs 9 (2000) and 10 (1999).
- Washington State Department of Fish and Wildlife Priority Habitats Species Database (May 2000).
- King County Sensitive Areas Map Folio (1990).
- King County Basin Reconnaissance Program Summary (1987).
- Soos Creek Basin (1990) and Green/Duwamish Subregional Planning Area (2000) Plans.

While many of these documents are over 10 years old, they represent the most current information available.

EXISTING HABITAT

Wildlife Habitat

The six proposed wastewater conveyance alternatives in the Mill Creek/Green River Subbasin Planning Area (MC/GR) cover a variety of habitats that support numerous species of wildlife. Additionally, the conveyance alternatives could occur in the vicinity of known federal and state endangered, threatened, and protected species. Wildlife species in the vicinity of any given alternative could include songbirds, red-tailed hawk, bald eagle, heron, deer, coyote, etc.

Within the MC/GR, breeding occurrences of both bald eagles (*Haliaeetus leucocephalus*) and great blue heron (*Ardea herodias*) have been documented by the Washington Department of Fish and Wildlife (WDFW) in 2001. Individual occurrences of mountain quail (*Oreortyx pictus*), American white pelican (*Pelecanus erythrorhynchos*), and western pond turtle (*Clemmys marmorata*) were noted within the subbasin planning area. With the exception of bald eagles, which are listed as a threatened species under the ESA, all of these species are listed as priority species by the WDFW (WDFW, 2001). The presence of a listed species results in additional coordination and regulatory requirements including preparation of a biological assessment or evaluation, and depending upon potential impacts, possible consultation with the U.S. Fish and Wildlife Service and/or National Marine Fisheries Service. Compliance with this process can add several months and in some cases, a year or more to the schedule.

Fish Habitat

The MC/GR area encompasses seven subbasins as designated in the King County Sensitive Area Map Folio (1990). The subbasins include two major rivers, the Black River and the White River, and seven major streams that include Springbrook Creek, Mill Creek, Big Soos Creek, Soosette Creek, Little Soos Creek, Jenkins Creek, Covington Creek, and Rock Creek. These watercourses are important spawning and rearing habitat for fish, including chinook salmon, which is listed as a threatened species under the ESA. Table 1 (attached) lists tributaries/streams and rivers that could potentially be affected by the wastewater improvement construction activities along the conveyance route alternatives. The table also includes information on the presence of fish species, alignment of watercourses relative to proposed alternatives, and the location of the stream/tributary or river relative to the planning zones as designated by King County Conveyance System Improvement Project Draft Task 250 Report (KC DNR, 2000b). Figures 1 and 2 (attached) show areas where proposed wastewater pipeline improvements would cross various streams.

Upstream and downstream fish passage through the planning basin is influenced by numerous physical barriers including natural waterfalls, dams, and culverts; by hydrologic factors such as reduced streamflows or lower flow velocities; and by biological factors that include predation or behavioral responses to disturbances.

Covington Creek Subbasin

The *King County Basin Reconnaissance Program Summary* (King County Surface Water Management Division, 1987) describes the Covington Creek Subbasin as having some of the best stream and streamside habitat remaining in King County. The generally excellent condition is attributed to low levels of development in the subbasin, leaving much of the streamside

vegetation and second-growth forest that lines the stream channels. Although favorable habitat for salmon exists, the Covington Creek Subbasin is under utilized by salmon.

All four of the CSI alternatives in the Soos Planning Zone would cross Rock Creek and Covington Creek, both listed as Class 2 streams (King County, 1990), with the latter documented as having chinook presence. The King County Code (KCC) (Title 21A.06.1240) utilizes a rating system to classify streams with a value from one to three. Class 1 streams are inventoried as "Shorelines of the State" under the King County Shoreline Master Program, class 2 streams are characterized as being smaller than class 1 streams which flow year-round or used by salmonids, and class 3 streams are defined as intermittent during years of normal rainfall and are not used by salmonids. Title 21A.24.360 of the KCC lists stream buffers: class 1 streams and a class 2 streams used by salmonids have 100-foot buffers, class 2 streams without salmonids have a 50-foot buffer, and class 3 streams have 25-foot buffers.

Jenkins Creek Subbasin

Stream corridors in the Jenkins Creek Subbasin are largely undisturbed, with sufficient habitat necessary for the anadromous and resident salmonids that use them. However, resident anadromous populations appear to be underrepresented. This may be attributed to controls used by a state hatchery on Big Soos Creek to limit fish access into the Jenkins Creek system (King County Surface Water Management Division, 1987).

All of the CSI alternatives in the Soos Planning Zone cross and/or parallel four streams in the Jenkins Creek Subbasin. Two of the four streams are designated as Class 2, another has not been assigned a designation, and the other stream, Jenkins Creek, is a Class 1 stream with documented chinook presence (King County, 1990).

Lower Green River Subbasin

Similar to other subbasins in the planing area, the Lower Green River Subbasin endures increased volumes of runoff generated by impervious surfaces. If the runoff enters natural channels, it often causes erosion, scouring, and increased downstream sedimentation. Specific problems listed by the *King County Basin Reconnaissance Program Summary* (King County Surface Water Management Division, 1987) include channel and bank erosion along many tributaries, landsliding as a present and future threat on steep valley walls, and the elimination of instream habitat including large organic debris, pools, and gravels. Also, most of the wetlands historically found throughout the area have been filled, drained, or otherwise altered (KCDNR 2000a).

No natural barriers to upstream or downstream migrations of anadromous salmonids have been identified within the reaches of the Lower Green River through a majority of Kent and Auburn, however biological barriers (adverse water quality conditions) exist in the Green River from river mile (RM) 11 to 32 (KC DNR, 2000a).

The proposed Parallel and Rerouting Alternatives in the Kent Planning Zone would both cross the Green River, a Class 1 stream, with documented chinook presence. Alternatives 1, 2, and 4 in the Auburn Planning Zone would cross an unclassified tributary that has no fish species present (King County, 1990).

Middle Green River Basin
One small tributary in the Middle Green River Subbasin is included within the MC/GR boundary. The Habitat Limiting Factors and Reconnaissance Assessment Report (King County, 2000a) states there is suitable coho and cutthroat habitat in the tributary, however, none are present due to an artificial barrier.

None of the CSI alternatives are included within the Middle Green River Subbasin boundary.

Mill Creek Subbasin
The quality of fish habitat has declined in the Mill Creek Subbasin, as agricultural and urban pollution, channelization and flood control, and sedimentation from upstream erosion have limited the supply of clean water and wetland areas available for fish use. The *King County Basin Reconnaissance Program Summary* (King County Surface Water Management Division, 1987) identifies the following factors that have increased damage to fish habitat within the MC/GR: elimination of habitat (commonly by draining or filling wetlands), alteration of stream character due to channelization, and pollution of surface waters. Runoff from the City of Auburn's central business district also contributes pollutants into the Mill Creek system. Water quality is impacted as floodwaters enter through Mill Creek and Mullen Slough when the Green River reaches flood stage. As flood conditions (which occur almost every year) cause much of the valley to become inundated, manure suspension occurs which adversely impacts water quality (King County Environmental Division, 1991). Mill Creek, the only major drainage flowing through the Mill Creek subbasin within the planning area, is classified as one of the most polluted streams draining into the Green/Duwamish River system.

Both the Parallel Alternative and the Rerouting Alternative would be constructed in the vicinity of fish bearing streams in the Mill Creek Subbasin. The Parallel Alternative would cross or parallel four streams, including Mill Creek which contains chinook salmon. The Rerouting Alternative would cross and/or parallel five streams and would also cross Mill Creek.

Soos Creek Subbasin
The habitat of the Soos Creek Subbasin is in generally good condition and supports large populations of both native and hatchery anadromous fish. Habitat in the subbasin is threatened in some areas by bank erosion and degraded water quality associated with land clearing, livestock feces, and wetland filling as a result of development (King County Surface Water Management Division, 1987). Also, juvenile fish are presumed to use the entire length of Soos Creek and associated wetlands for rearing (KC DNR 2000a).

The Soos Creek subbasin consists of five major streams including Big Soos Creek, Little Soos Creek, Soosette Creek, Covington Creek, and Jenkins Creek and their associated tributaries. Little mature native vegetation remains in the riparian zone along the mainstem of Soos Creek and existing habitat is composed primarily of shrubs or grasses. Development and roads have limited the availability of riparian habitat. Bank stability, shade, and organic matter recruitment are considered poor along approximately 65 to 80 percent of Soos Creek due to development that extends to within 75 feet of the stream or because of the undersized riparian vegetation (KCDNR 2000a).

Some or all of the Soos Creek Planning Zone Alternatives will either cross or parallel five

streams and tributaries, including one Class 1 stream and three Class 2 streams in the Soos Creek Subbasin. Alternatives 2, 3, and 4 would be within the vicinity of streams containing federally listed chinook (King County, 1990).

Springbrook Creek/Black River Subbasin

The *King County Basin Reconnaissance Program Summary* (King County Surface Water Management Division, 1987) lists numerous factors that contribute to poor habitat in the Springbrook Creek subbasin (formerly called the Black River subbasin). Similar to other subbasins in the planning area, stream channel erosion caused by development and landsliding associated with stream erosion in ravines have had detrimental effects on stream habitat in the subbasin. Further, the use of natural streams in the subbasin for urban stormwater conduits has adversely impacted habitat. Many tributary basins that drain into the Black River have undergone rapid transition due to urban development, causing excessive sedimentation in waterways. As a result, wetlands have been filled, creating impassable obstacles to migrating salmon and causing salmonid spawning gravels to suffocate (King County Environmental Division, 1991). Under present conditions, the lack of suitable spawning habitat and questionable rearing capacity due to degraded water quality, especially during warm summer months, adversely impacts adult chinook and coho reproductive success along with coho, cutthroat, and steelhead juvenile survival (KCDNR 2000a).

The Parallel and Rerouting Alternatives, both located in the Kent Planning Zone within the Springbrook Creek Subbasin, would cross and parallel four Class 2 streams. None of the streams in the vicinity of the CSI alternatives contain chinook presence (King County, 1990).

White River

The 1987 *King County Basin Reconnaissance Program Summary* (King County Surface Water Management Division, 1987) reports all streams within Algona, Pacific, and Auburn in the White River Subbasin have been ditched and straightened with little streamside vegetation remaining. There has been little negative development-related impact on streamside habitat within the subbasin. Water quality within the MC/GR where proposed CSI routes pass is generally good to excellent. The two potential threats to fish habitat in the subbasin include extensive use of both streams and wetlands by livestock and encroachment of development into stream corridors and wetlands.

Two small tributaries within the White River Subbasin are included in the MC/GR. Salmon presence within the two tributaries is unknown. However, since these two watercourses are tributaries to the White River, which has documented presence of various species of salmonids (Table 1), salmon may likely use these tributaries, unless a fish barrier at the confluence of these tributaries and the White River exists (Kerwin, 1999).

None of the CSI Alternatives are proposed in the White River Subbasin boundary.

LIMITING FACTORS

An understanding of limiting factors is an important first step in the environmental review of various CSI routes. Understanding limiting factors is important for several reasons. First, and

most importantly, the significance of impacts is dependent upon the degree of limitation. For example, the impact of removing the last tree in a damaged buffer area would be more significant than removing a portion of the buffer vegetation in a densely vegetated area. In addition, there are many perceived limitations; however, baseline information is such that more study is often necessary to determine actual field conditions in terms of limiting factors. It is also important to understand limiting factors because this information is necessary when producing a Biological Assessment. An understanding of limiting factors is also needed to show how a given CSI route alternative will not further limit conditions below thresholds.

Most of the watersheds within the study area have been modified to some extent from natural conditions by development that has occurred in stages over the past 150 years. Most commonly, development impacts have included land development, road construction, bank stabilization, and flood control projects. These types of watershed level changes have affected conditions within each stream although the degree of modification varies greatly by basin. Flood control and bank stabilization efforts have altered natural patterns of gravel migration and natural channel meandering in almost every basin crossed by one of the CSI routes. Agriculture, development, lawn maintenance, and/or landscaping are common throughout the entire CSI study area. These watershed level changes have resulted in stream conditions that are often limiting to fish. Because limiting factors vary dramatically by location and even by season, a more detailed, site specific evaluation of limiting factors should be included in the project-level environmental review of any proposed route alternative.

Ideally, reliable scientific information would exist for all listed populations that would allow the effects of an action to be quantified in terms of population impacts (NMFS, 1999). Given that the listing of chinook salmon is a relatively recent event (March 1999), little quantitative information is currently known regarding biological requirements for listed fish species in almost all basins. The limited information is generally only for major streams and little, if any, hard data is known regarding secondary streams and smaller tributaries. NMFS guidance for conducting ESA reviews requires that in the absence of population-specific information, an assessment must define the biological requirements of a listed fish species in terms of properly functioning conditions (PFC) (NMFS, 1996). PFC is the sustained presence of natural habitat-forming processes necessary for the long-term survival of the species through the full range of environmental variation. Indicators of PFC vary between different landscapes based on unique physiographic and geologic features. Since aquatic habitats are inherently dynamic, PFC is defined by the persistence of natural processes that maintain habitat productivity at a level sufficient to ensure long-term survival (NMFS, 1996).

NMFS (1996) and USFWS (1998) have developed guidelines to assist in conducting a limiting factors analysis related to the determination of project impacts on ESA listed salmonid fish based on the following pathways and indicators:

Table 2. Matrix of Pathways and Indicators

PATHWAY	INDICATORS	PROPERLY FUNCTIONING	AT RISK	NOT PROPERLY FUNCTIONING
Water Quality:	Temperature	50-75°F[1]	57-60° (spawning) 57-64° (migration & rearing)[2]	>60° (spawning) >64° (migration & rearing)[2]
	Sediment/Turbidity	<12% fines (<0.85 mm) in gravel3, turbidity low	12-17% (westside)[3] 12-20% (eastside)[2] turbidity moderate	>17% (westside)[3] >20% (eastside)[2] fines at surface or depth in spawning habitat[2], turbidity high
	Chemical Contamination/Nutrients	Low levels of chemical contamination from agricultural, industrial and other sources, no excess nutrients, no CWA 303d designated reaches[5]	Moderate levels of chemical contamination from agricultural, industrial and other sources, some excess nutrients, one CWA 303d designated reach[5]	high levels of chemical contamination from agricultural, industrial and other sources, high levels of excess nutrients, more than one CWA 303d designated reach[5]
Habitat Access:	Physical Barriers	Any man-made barriers present in watershed allow upstream and downstream fish passage at all flows	Any man-made barriers present in watershed do not allow upstream and/or downstream fish passage at base/low flows	Any man-made barriers present in watershed do not allow upstream and/or downstream fish passage at a range of flows
Habit Elements:	Substrate	Dominant substrate is gravel or cobble (interstitial spaces clear), or embeddedness <20%[3]	Gravel and cobble is subdominant, or if dominant, embeddedness 20-30%[3]	Bedrock, sand, silt or small gravel dominant, or if gravel and cobble dominant embeddedness >30%[2]
	Large Woody Debris	>80 pieces/mile >24" diameter >50 ft. length[4]; >20 pieces/mile >12" diameter >35 ft. length[2]; and adequate sources of woody debris recruitment in riparian areas	Currently meets standards for properly functioning, but lacks potential sources from riparian areas of woody debris recruitment to maintain that standard	Does not meet standards for properly functioning and lacks potential large woody debris recruitment

Table 2. Matrix of Pathways and Indicators (cont.)

PATHWAY	INDICATORS	PROPERLY FUNCTIONING	AT RISK	NOT PROPERLY FUNCTIONING
Habit Elements (cont.):	Pool Frequency Channel width / # pools/mile[6] 5 feet / 184 10 feet / 96 15 feet / 70 20 feet / 56 25 feet / 47 50 feet / 26 75 feet / 23 100 feet / 18	Meets pool frequency standards (left) and large woody debris recruitment standards for properly functioning habitat (above)	Meets pool frequency standards but large woody debris recruitment inadequate to maintain pools over time	Does not meet pool frequency standards
	Pool Quality	Pools >1 meter deep (holding pools) with good cover and cool water[3], minor reduction of pool volume by fine sediment	Few deeper pools (>1 meter) present or inadequate cover/temperature[3], moderate reduction of pool volume by fine sediment	No deep pools (>1 meter) and inadequate cover/temperature[3], major reduction of pool volume by fine sediment
	Off-channel Habitat	Backwaters with cover, and low energy off-channel areas (ponds, oxbows, etc.)[3]	Some backwaters and high energy side channels[3]	Few or no backwaters, no off-channel ponds[3]
	Refugia (important remnant habitat for sensitive aquatic species)	Habitat refugia exist and are adequately buffered (e.g., by intact riparian reserves); existing refugia are sufficient in size, number and connectivity to maintain viable populations or sub-populations[7]	Habitat refugia exist but are not adequately buffered (e.g., by intact riparian reserves); existing refugia are insufficient in size, number and connectivity to maintain viable populations or sub-populations[7]	Adequate habitat refugia do not exist[7]
Channel Condition & Dynamics:	Width/Depth Ratio	<102,4	10-12 (we are unaware of any criteria to reference)	>12 (we are unaware of any criteria to reference

Table 2. Matrix of Pathways and Indicators (cont.)

PATHWAY	INDICATORS	PROPERLY FUNCTIONING	AT RISK	NOT PROPERLY FUNCTIONING
Channel Condition & Dynamics: (cont.)	Streambank Condition	>90% stable; i.e. on average, less than 10% of banks are actively eroding[2]	80-90% stable	<80% stable
Channel Condition & Dynamics (cont.):	Floodplain Connectivity	Off-channel areas are frequently hydrologically linked to main channel; overbank flows occur and maintain wetland functions, riparian vegetation and succession	Reduced linkage of wetland, floodplains and riparian areas to main channel; overbank flows are reduced relative to historic frequency, as evidenced by moderate degradation of wetland function, riparian vegetation/succession	Severe reduction in hydrologic connectivity between off-channel, wetland, floodplain and riparian areas; wetland extent drastically reduced and riparian vegetation/succession altered significantly
Flow/Hydrology:	Change in Peak/Base Flows	Watershed hydrograph indicates peak flow, base flow and how timing characteristics comparable to any undisturbed watershed of similar size, geology and geography	Some evidence of altered peak flow, baseflow and/or flow timing relative to an undisturbed watershed of similar size, geology and geography	Pronounced changes in peak flow, baseflow and/or flow timing relative to an undisturbed watershed of similar size, geology and geography
	Increase in Drainage Network	Zero or minimum increases in drainage network density due to roads [8,9]	Moderate increases in drainage network density due to roads (e.g., ~5%)[8,9]	Significant increases in drainage network density due to roads (e.g., ~20-25%)[8,9]
Watershed Conditions:	Road Density & Location	<2 ml/ml[2,11], no valley bottom roads	2-3 ml/ml[2], some valley bottom roads	>3 ml/ml2, many valley bottom roads
	Disturbance History	<15% ECA (entire watershed) with no concentration of disturbance in unstable or potentially unstable areas, and/or refugia, and/or riparian area; and for NWFP area (except AMAs), ≥15% retention of LSOG in watershed[10]	<15% ECA (entire watershed) but disturbance concentrated in unstable or potentially unstable areas, and/or refugia, and/or riparian area; and for NWFP area (except AMAs), ≥15% retention of LSOG in watershed[10]	<15% ECA (entire watershed) and disturbance concentrated in unstable or potentially unstable areas, and/or refugia, and/or riparian area; does not meet NWFP standard for LSOG retention

Table 2. Matrix of Pathways and Indicators (cont.)

PATHWAY	INDICATORS	PROPERLY FUNCTIONING	AT RISK	NOT PROPERLY FUNCTIONING
Watershed Conditions (cont.):	Riparian Reserves	The riparian reserve system provides adequate shade, large woody debris recruitment, and habitat protection and connectivity in all subwatershed, and buffers or includes known refugia for sensitive aquatic species (>80% intact), and/or for grazing impacts: percent similarity of riparian vegetation to the potential natural community/composition >50%[12]	Moderate loss of connectivity or function (shade, LWD recruitment, etc.) of riparian reserve system, or incomplete protection of habitats and refugia for sensitive aquatic species (~70-80% intact), and/or for grazing impacts: percent similarity of riparian vegetation to the potential natural community/composition 25-50% or better[12]	Riparian reserve system is fragmented, poorly connected, or provides inadequate protection of habitats and refugia for sensitive aquatic species (<70% intact), and/or for grazing impacts: percent similarity of riparian vegetation to the potential natural community/composition <25%[12]

1 Bjornn, T.C. and D.W. Reiser, 1991. Habitat Requirements of Salmonids in Streams. American Fisheries Society Special Publication 19:83-138. Meehan, W.R., ed.

2 Biological Opinion on Land and Resource Management Plans for the: Boise, Challis, Nez Perce, Payette, Salmon, Sawtooth, Umatilla, and Wallowa-Whitman National Forests. March 1, 1995

3 Washington Timber/Fish Wildlife Cooperative Monitoring Evaluation and Research Committee, 1993. Watershed Analysis Manual (Version 2.0). Washington Department of Natural Resources.

4 Biological Opinion on Implementation of Interim Strategies for Managing Anadromous Fish-producing Watersheds in Eastern Oregon and Washington, Idaho, and Portions of California (PACFISH). National Marine Fisheries Service, Northwest Region, January 23, 1995.

5 A Federal Agency Guide for Pilot Watershed Analysis (Version 1.2), 1994.

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7 Frissell, C.A., Liss, W.J., and David Bayles. 1993. An Integrated Biophysical Strategy for Ecological Restoration of Large Watersheds. Proceedings from the Symposium on changing roles in Water Resources Management and Policy, June 27-30, 1993 (American Water Resources Association), p. 449-456.

8 Wemple, B.C. 1994. Hydrologic Integration of Forest Roads with Stream Networks in Two Basins, Western Cascades, Oregon. M.S. Thesis, Geosciences Department, Oregon State University.

9 E.g., see Elk River Watershed Analysis Report, 1995. Siskiyou National Forest, Oregon.

10 Northwest forest Plan. 1994. Standards and Guidelines for Management of Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern spotted Owl. USDA Forest Service and USDI Bureau of land Management.

11 USDA Forest Service. 1993. Determining the Risk of Cumulative Watershed Effects Resulting from Multiple Activities.

12 Winward, A.H. 1989. Ecology Status of Vegetation as a base for Multiple Produce Management. Abstracts 42nd annual meeting, society for Range Management, Billings MT, Denver Co; Society for Range Management, p. 277.

Water Quality

Water quality indicators for Properly Functioning Conditions as described by NMFS (1996) and USFWS (1998) include temperature, sediment/turbidity, and chemical contamination/nutrients. Site-specific water quality information typically unavailable for most of the smaller streams and almost all wetlands. Records are often incomplete, even for larger streams that have water quality information available. Also, most water quality information that has been collected in the past has been related to the needs of human health and may not necessarily reflect the requirements of ESA listed salmonids. Reliable, continuous information on temperatures, a particularly critical and often limiting parameter for salmonids, is commonly lacking in the available background information.

Habitat Access

Habitat access related to the upstream blockages to adult salmon is commonly one of the better documented indicators of Properly Functioning Conditions; however, analysis related to juvenile passage is less developed. The importance of providing juvenile passage is becoming better understood. Still, data on juvenile passage is not usually available at the same levels as it is for adult passage. Commonly, habitat access is more of a concern in smaller streams or within the headwater areas of larger streams. Most of the larger rivers and streams within the study area are crossed by bridges that are not as significant a blockage issue as culverts, more commonly used on smaller drainages.

Habitat Elements

Habitat elements include substrate, large woody debris (LWD), pool frequency, pool quality, off channel habitat, and refugia (NMFS, 1996; USFWS, 1998). NMFS and USFWS define Properly Functioning Conditions for these indicators, respectively, as: gravel and cobble dominated substrate with less than 20 percent embeddedness; LWD (greater than 24 inches diameter and 50 feet long) at greater than 80 pieces per mile; approximately 70 pools per mile; a prevalence of high quality pools over 3 feet deep; a prevalence of backwaters and off-channel areas; and a prevalence of high quality refugia including adequate buffers and riparian reserves.

Flood control projects, bank stabilization, and development have limited the functionality of many of these habitat elements for most streams within the study area. However, the assessment of properly functioning habitat elements usually requires a site-specific evaluation at the project level since there is limited information for these elements for most of the smaller streams within the study. A lack of quantitative data limits the accuracy of determinations for substrate, LWD, pool quality, and pool frequency related to Properly Functioning Conditions; however, it is often readily evident if a stream does not meet the thresholds of “properly functioning” for these elements. Projects that impact streams that are not properly functioning for particular habitat elements should be designed so that further decline is avoided.

Flow/Hydrology

The US Geological Survey (USGS) maintains gages on many larger streams; however, records of flow level and stream and wetland hydrology are commonly lacking for most smaller streams within the study area. Also, the information that is most commonly available either from historic gauge data or as a result of hydraulic modeling at the project level is usually of limited use when assessing limiting factors for fish. In the past, most flow and hydraulic data and evaluations have focused on peak flows during flood events. While these data are important to fish, information on seasonal baseflow conditions are of equal importance.

Lacking site specific data, often this indicator is evaluated in relation to the level of development that has occurred within a basin. Urbanization of stream basins generally results in changes in base flows and peak flows. Urbanization increases impervious surface area which decreases infiltration and may significantly alter stream baseflow (May et al., 1997). Pavement, roofs, and compacted surfaces increase runoff rates and even pervious areas such as lawns and landscaped beds have higher runoff rates than undisturbed native forest. NMFS (1996) and USFWS (1998) state that flow/hydrology is not properly functioning when there are pronounced changes in peak flows and base flows and there has been a significant increase in impervious surface coverage within a basin (most often attributed to roads). It is anticipated that most of the streams within the study area are limited to some degree related to flows and hydrology.

Watershed Conditions

NMFS (1996) and USFWS (1998) define “not properly functioning” watershed conditions as having many valley bottom roads, the disturbance of greater than 15 percent of the entire watershed, and fragmented riparian conditions. Although most project level environmental reviews do not include a specific evaluation of land use coverage within the entire basin, indicators related to this function are often evident based on the surrounding urban development. In all but a few areas, most watersheds in the study area have at least 15 percent of the basin that may be described as disturbed. The study area contains many valley bottom roads. These factors are likely to resulted in a “not properly functioning” watershed condition for most basins within the study area.

CONSTRUCTION CONSIDERATIONS

Most of the environmental considerations and permit requirements for conveyance system improvement projects arise from potential construction impacts to wetland and stream resources. Proposed routes that impact streams and wetlands often require additional permitting effort, particularly if the wetland or stream occurs in a basin with known or suspected use by ESA listed fish species.

STREAM IMPACTS

Stream crossing methods commonly involve one of several methods: jacking and boring, microtunneling, directional drilling, or open-cut trench construction. The levels of impacts vary by construction method. A summary of each method related to environmental issues follows:

Method	Positives	Negatives	Comments
Jack and Bore	• No or limited impact to stream bed or banks. • Provides access to obstructions for removal via casing.	• Requires large pits adjacent to stream riparian corridor. • May require dewatering channel if high water table.	• Issues with construction of pits in riparian area may be negligible if pits can be located in roadways, roadside areas, or disturbed areas.
Microtunneling	• No or limited impact to stream bed or banks. • Can traverse longer distances between pits than jack and bore	• Requires large pits. • May require dewatering channel if high water table. • Does not allow access to face. • May require alternate method if not successful.	• Low level of predictability for stream crossings where extensive geotechnical work is precluded by desire to limit impacts to stream.
Directional Drilling	• Does not require large jacking or receiving pits. • Does not require dewatering. • Can be used over long distances reducing need to impact riparian areas	• Requires use of high pressure drilling fluid. • May require alternate method if not successful.	• Drilling fluid is typically non-toxic bentonite; however, can result in impacts to stream bed and increased turbidity of released to stream via overflow from receiving pits or fractures.
Open Cut	• Most predicable method related to impact assessment. • Typically quickest.	• Requires dewatering and direct disturbance to stream bed. • Short-term turbidity increases when water is re-introduced. • May result in channel de-watering if trench not properly plugged.	• Often the method of last resort.

Table 2 lists the six primary impact pathways that could directly affect streams and ESA listed fish species depending on the crossing method or combination of methods. Most impacts from pipeline crossings are temporary in nature and usually are limited to construction-related impacts; however, given the sensitivity of aquatic organisms to degradation, even short term impacts can be significant. The first and most significant impact occurs when a portion of stream must be dewatered. Stream channel dewatering may be required by the need to divert or bypass the stream around or through a work area to facilitate open cut, jack and bore, or microtunnel construction. The second effect is related to increased potential for erosion and

sedimentation as a result of soil disturbance necessary to construct pits or from other construction in proximity to the streams or adjacent riparian areas. The third effect is related to the construction-related discharges of water pumped from the pits or nearby trench sections. The forth effect is related to the potential for spills or releases of hazardous materials during construction in proximity to streams. The fifth effect is related to clearing and grading.

Diversion and Stream Channel Dewatering

Diversion and dewatering typically is the impact pathway that most often results in adverse effects to listed fish (if ESA listed fish are present in the drainage). Fish, including chinook and bull trout, if present, could die if not moved or precluded from the dewatered sections.

The salvage or removal of fish and other aquatic life from the dewatered section of stream is often a standard provision of the WDFW HPA. Salvage can occur via several methods. Arguably, the most effective method involves using a direct-current backpack electrofisher to stun, and then remove, fish from the portion of stream to be dewatered. Other methods include the use of seine nets or kick nets to capture or herd fish from the construction area. The latter two methods are less effective than electrofishing in areas with riprap banks, large amounts of woody debris or in areas with cobble or boulder substrates. Regardless of the method employed, the removal of fish from dewatered sections of stream is associated with the potential to harm or harass fish, thus resulting in a "may effect, likely to adversely effect" determination for the project during Section 7 consultation if listed fish are present (or thought to be present) within the drainage. However, it should be noted that it is likely that more fish would be killed during dewatering if removal were not attempted.

In addition to direct mortality or harassment resulting from dewatering, the construction of a diversion or bypass will serve to exclude fish and other aquatic life from the construction area. The bypass or diversion structure may also result in the blockage of upstream migration, downstream migration, or both, depending on the type of diversion. While most concern placed around blockages is in relation to adult upstream migration, during spawning periods, any structure that impairs the free movement of juvenile fish is also a likely adverse effect if juvenile fish of a listed species are present in the stream and if the diversion or dewatering occurs for any length of time.

Dewatering may also result in the death of other aquatic organisms that may provide food for juvenile or rearing fish or wildlife. Therefore, it is often necessary to evaluate the potential effects the dewatering will have on the species' food base. Often densities of listed fish are below the carrying capacity of the stream, so food supply is not generally limiting; however, this may be a significant effect in streams where the listed species is relatively abundant.

Erosion and Sedimentation

Grading and excavation in proximity to the stream banks or riparian corridor could result in erosion from disturbed soils and increased sedimentation and turbidity in the adjacent stream unless properly mitigated. Overall, the potential for upland erosion and sedimentation to enter streams is commonly controlled by the implementation of various Temporary Sedimentation and

Erosion Control (TESC) measures and other Best Management Practices (BMPs). While often effective in minimizing impacts from sedimentation and erosion, TESC measures and BMPs are not typically able to completely avoid off-site sediment transport under all conditions. Difficult to successfully implement for site-based work, TESC measures and BMPs are particularly difficult to implement effectively for projects involving long construction corridors. Impacts related to sedimentation and erosion are a particular concern in urban and urbanizing stream basins where properly functioning conditions are already degraded.

Streams in urban or urbanizing basins may be sediment-limited, meaning that stream gravels are embedded with fine sediments as to limit the quantity and quality of available spawning habitat for listed salmonid species and other fish.

Even with effective TESC measures and BMPs in place, projects that require in-water work or the diversion of the stream will result in short-term, episodic increases in turbidity levels downstream from the work area. Work in the stream channel will re-suspend stream-bottom materials for a short period of time. Typically, increases in downstream turbidity are observed from several hundred feet to up to a half-mile below the work area. The degree of the increase in turbidity is largely dependent on substrate condition, the percent of fine materials present in the substrate, and the type of soils along the stream bank. Turbidity itself is not commonly lethal to fish except at extremely high levels (above those likely to be encountered for a stream crossing with proper BMPs in place); however, turbidity can alter the behavior of fish or cause them to avoid using habitats with higher than normal turbidity.

Discharges of Groundwater

Stream crossings or other construction in proximity to streams and wetlands often require dewatering of the trench or bore pits as a result of locally high groundwater levels. Dewatering is commonly either accomplished by installing wells that are pumped to depress the local groundwater table or by pumping seepage directly from the pits or trench. In the past, the discharge of dewatering water has been a detail that is commonly left for the contractor to arrange; however, this practice can result in impacts to the adjacent stream or wetlands and should be included during the environmental review so that dewatering can be included as a permitted action.

There are typically two concerns with dewatering pits and trenches or depressing groundwater. The most common issue is that dewatering water is often highly turbid and may result in increases of turbidity below the discharge point. Even if the water is discharged to uplands and allowed to flow overland, it is still often of a higher turbidity than background conditions. The potential effects of turbidity are discussed in the previous section. The second concern is that the discharge water could artificially effect the flow regime of the stream by increasing flows in the stream or by reducing flows if significant pumping is required to depress groundwater levels. These types of impacts are generally a more significant issue in urban or urbanized basins where natural stream flow conditions have been altered by the surrounding development.

Accidental Discharges

Almost all modern construction requires the use of heavy machinery. Both ESA listed fish and other aquatic life could be adversely impacted by the release of any potentially toxic materials (e.g., hydraulic fluid, gasoline, and oil) into the stream if that life stage were present. Accidents such as spills usually are not able to be specifically addressed in during a site specific evaluation of project impacts because it is difficult to anticipate where or when they may occur. For example, a spill of 50 gallons of fuel or hydraulic fluid onto a road would not likely have significant adverse impacts if it where cleaned up promptly. In comparison, a spill of only a few gallons directly into the water could have a significant adverse impact on fish. Typically, this potential impact is discussed in terms of avoidance through the implementation of BMPs or other conservation measures such as the development of a project-specific spill prevention and contingency plans.

Clearing and Grading

The most common indirect effects resulting from conveyance system improvements are usually related to clearing and grading of vegetation. Cleared vegetation may not regenerate for several years and soils disturbed by grading could provide a chronic source of erosion potential and sedimentation if not properly stabilized following construction. Clearing could result in an indirect effect to fish species as a result of decreased habitat suitability and riparian complexity, and increased bank erosion and sedimentation could result in habitat degradation.

INTERRELATED AND INTERDEPENDENT ACTIONS

The ESA requires that federal agencies consider potential impacts to listed species resulting from actions that are interrelated to, or interdependent on, the primary project. Federal agencies often scrutinize sewer and road projects because of the potential for "urbanization" to effect the character of nearby waterways, resulting in adverse effects to fish and other aquatic organisms within nearby streams. It is possible that until the effects of urbanization are addressed on a regional basis, either through approved provision included via the Section 4(d) rulemaking process or through an approved Habitat Conservation Plan, NMFS and USFWS will continue to evaluate potential interrelated and interdependent actions on a project by project basis. This process may include obtaining the necessary ESA-related approvals for each potentially impacted water-body crossed by the proposed conveyance system alignment.

PERMIT CONSIDERATIONS

Wetland Permits Issues

Conveyance system improvements that impact wetlands trigger the need for permit compliance at the local, state, and federal levels. Within unincorporated King County, projects that impact wetlands are subject to the requirements of the Chapter 21A of County Code. A wetland special

study is required for all projects that impact wetlands or their buffers. King County regulations also require that disturbed wetlands and buffers be restored. Other local jurisdictions have similar requirements. At the state and federal levels, most pipeline projects with wetland impacts are permitted under the Section 404/401 Nationwide Permit System. The US Army Corps of Engineers (COE) and the Washington State Department of Ecology (WDOE) are the federal and state agencies, respectively, with jurisdiction over most conveyance projects that impact wetlands. Depending on the circumstance, projects that impact wetlands may also be regulated by State Hydraulic Code and may require a Hydraulic Project Approval by the Washington State Department of Fish and Wildlife (WDFW).

Nationwide Permit 12 has been authorized to allow the construction of up to 500 linear feet of pipeline within wetlands. Projects with wetland impacts over 500 linear feet must be permitted following the Individual Permit process. There are many differences between the Nationwide and Individual permit pathways; however, the most significant is that the Corps may require the preparation of an alternatives analysis for Individual Permit project. An alternatives analysis may be required to show that the proposed project has fewer environmental impacts than other viable alternatives. Both the Nationwide and Individual permit process trigger Endangered Species Act Section 7 consultation and National Historic Preservation Act Section 106 consultation.

Stream Crossing Permits Issues

Commonly, conveyance system improvements that impact stream or riparian areas trigger the need for many of the same local, state, and federal permits and approvals as projects that impact wetlands. As with projects that affect wetlands, projects that impact streams within the County are subject to Chapter 21A of County Code and a stream special study may be required. A summary of the potential number of stream crossings associated with each alternative are summarized in the table below. These numbers likely represent worst-case scenarios, as some impacts may be avoided by minor route changes and engineering designs.

At the state and federal level, most pipeline projects with streams are permitted under the Section 404/401 Nationwide Permit System as discussed above for wetlands; however the WDFW HPA is almost always required for projects that directly impact streams. Nationwide Permit 12 has been authorized to allow the construction of up to 500 linear feet of pipeline within streams. Projects with wetland impacts over 500 linear feet of stream impacts must be permitted with an Individual Permit with the same requirements discussed above in the wetland section. The need for a COE permit triggers Endangered Species Act Section 7 consultation and National Historic Preservation Act Section 106 consultation for work in both wetlands and/or streams. A possible exception to the need for COE permit is for stream crossings that do not require in-water work, stream diversion or dewatering, or that do not otherwise impact wetland areas. In these instances, a COE nexus may be avoided and a Section 7 review would not be required unless the project included involvement from another federal entity in relation to other project elements.

Most permits require the restoration of the disturbed portions of stream bank and stream bed to pre-existing conditions. The most common effect of ESA planning and permitting on construction is generally related to the implementation of in-water work windows. In water

work windows commonly regulate not only construction that effects wetted areas of the stream, but any area below the ordinary high water mark of a drainage. For streams with wide floodplains or large associated riparian wetlands, this may include a larger area than just the region between the banks of the stream. Work windows vary depending on the basin and are commonly adjusted by the permitting agencies depending on the type of work and the fisheries resources within each stream. Typically fresh water work windows range from mid-June through mid-September but may be as short as July 1 through August 30 for streams with significant juvenile and adult use. Work windows may also extend to mid-October for smaller headwater streams that generally support populations of coho salmon and resident cutthroat trout. Work windows are commonly set as a condition of the WDFW HPA; however, NMFS and/or the COE may require slightly different work windows to further reduce impacts to listed fish if applicable.

In addition, King County-sponsored projects that trigger federal permits, also trigger an internal review and concurrence from the King County Biological Review Panel (BRP). The BRP reviews and comments upon Biological Assessments prepared on behalf of County projects, prior to submission of the documents to the agencies. In some instances, this review process can be lengthy, and can result in schedule implications.

Alternative	Potential Number of Stream Crossings
Parallel Alternative	9
Rerouting Alternative	10
Alternative 1	9
Alternative 2	11
Alternative 3	11
Alternative 4	12

SUMMARY

Based upon the conveyance system alternative alignment information review to date, it appears that Alternative 4 would result in the greatest number of required environmental permits, and both the Parallel Alternative and Alternative 1 appear to have the fewest number of environmental permits. The selected alternative route would require a detailed field survey to determine the actual permitting and mitigation requirements associated with construction and operation of the conveyance system.

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Table 1. Mill Creek / Green River Sub-Regional Planning Area
Streams within the planning area and documented fish use

WRIA	Waterbody Number	Waterbody Name	Drainage Basin	Jurisdiction	Planning Zone	Alternative Name	Type	FISH SPECIES PRESENT									Comments
								Unknown	Coho	Chinook	Chum	Sockeye	Pink	Cutthroat	Steelhead	Char	
9	09.0083 (west of Lake Sawyer)	Covington Creek	Covington Creek	Black Diamond	Soos	Alternative 1	Crosses		Williams, WDFW 1994, KCDNR 2001a, KCSWM 1990	Williams, KCDNR 2001a (likely), KCSWM 1990				KCDNR 2001a, KCSWM 1990	WDFW 1994, KCDNR 2001a, KCSWM 1990		Chinook should be present due to suitable habitat and absence of barriers; presence has not been observed. WDFW documents steelhead presence extending approx. 2.5 miles east of the stream's confluence w/Big Soos Creek. Coho, cutthroat, and steelhead prefer to spawn in smaller streams, including Covington Cr. (KCSWM 1990). Covington Cr. is documented as a Class 1 Stream (KC 1990).
9	09.0085	Rock Creek	Covington Creek	Black Diamond	Soos	Alternative 1	Crosses	Williams	KCDNR 2001a					KCDNR 2001a	KCDNR 2001a		Cutthroat and steelhead are documented from Lake Sawyer to the confluence of tributary 09.E (KCDNR 2001a). Sensitive Areas Map Folio (KC 1990) documents Rock Creek as a Class 2 stream with
9	09.0083 (west of Lake Sawyer)	Covington Creek	Covington Creek	Black Diamond	Soos	Alternative 2	Crosses		Williams, WDFW 1994, KCDNR 2001a, KCSWM 1990	Williams, KCDNR 2001a (likely), KCSWM 1990				KCDNR 2001a, KCSWM 1990	WDFW 1994, KCDNR 2001a, KCSWM 1990		Chinook should be present due to suitable habitat and absence of barriers; presence has not been observed. WDFW documents steelhead presence extending approx. 2.5 miles east of the stream's confluence w/Big Soos Creek. Coho, cutthroat, and steelhead prefer to spawn in smaller streams, including Covington Cr. (KCSWM 1990). Covington Cr. is documented as a Class 1 Stream (KC 1990).
9	09.0085	Rock Creek	Covington Creek	Black Diamond	Soos	Alternative 2	Crosses	Williams	KCDNR 2001a					KCDNR 2001a	KCDNR 2001a		Cutthroat and steelhead are documented from Lake Sawyer to the confluence of tributary 09.E (KCDNR 2001a). Sensitive Areas Map Folio (KC 1990) documents Rock Creek as a Class 2 stream with
9	09.0083 (west of Lake Sawyer)	Covington Creek	Covington Creek	Black Diamond	Soos	Alternative 3	Crosses		Williams, WDFW 1994, KCDNR 2001a, KCSWM 1990	Williams, KCDNR 2001a (likely), KCSWM 1990				KCDNR 2001a, KCSWM 1990	WDFW 1994, KCDNR 2001a, KCSWM 1990		Chinook should be present due to suitable habitat and absence of barriers; presence has not been observed. WDFW documents steelhead presence extending approx. 2.5 miles east of the stream's confluence w/Big Soos Creek. Coho, cutthroat, and steelhead prefer to spawn in smaller streams, including Covington Cr. (KCSWM 1990). Covington Cr. is documented as a Class 1 Stream (KC 1990).
9	09.0085	Rock Creek	Covington Creek	Black Diamond	Soos	Alternative 3	Crosses	Williams	KCDNR 2001a					KCDNR 2001a	KCDNR 2001a		Cutthroat and steelhead are documented from Lake Sawyer to the confluence of tributary 09.E (KCDNR 2001a). Sensitive Areas Map Folio (KC 1990) documents Rock Creek as a Class 2 stream with
9	09.0083 (west of Lake Sawyer)	Covington Creek	Covington Creek	Black Diamond	Soos	Alternative 4	Crosses		Williams, WDFW 1994, KCDNR 2001a, KCSWM 1990	Williams, KCDNR 2001a (likely), KCSWM 1990				KCDNR 2001a, KCSWM 1990	WDFW 1994, KCDNR 2001a, KCSWM 1990		Chinook should be present due to suitable habitat and absence of barriers; presence has not been observed. WDFW documents steelhead presence extending approx. 2.5 miles east of the stream's confluence w/Big Soos Creek. Coho, cutthroat, and steelhead prefer to spawn in smaller streams, including Covington Cr. (KCSWM 1990). Covington Cr. is documented as a Class 1 Stream (KC 1990).
9	09.0085	Rock Creek	Covington Creek	Black Diamond	Soos	Alternative 4	Crosses	Williams	KCDNR 2001a					KCDNR 2001a	KCDNR 2001a		Cutthroat and steelhead are documented from Lake Sawyer to the confluence of tributary 09.E (KCDNR 2001a). Sensitive Areas Map Folio (KC 1990) documents Rock Creek as a Class 2 stream with

Table 1. Mill Creek / Green River Sub-Regional Planning Area
Streams within the planning area and documented fish use

WRIA	Waterbody Number	Waterbody Name	Drainage Basin	Jurisdiction	Planning Zone	Alternative Name	Type	FISH SPECIES PRESENT									Comments
								Unknown	Coho	Chinook	Chum	Sockeye	Pink	Cutthroat	Steelhead	Char	
9	09.0083 (east of Lake Sawyer)	Ravensdale Creek	Covington Creek	Black Diamond	Soos	Unaffected by proposed conveyance	---		KCDNR 2001a					KCDNR 2001a			Sensitive Areas Map Folio (KC 1990) documents Ravensdale Creek as a Class 2 stream with salmonids.
9	09.0085A	Unnamed	Covington Creek	Black Diamond	Soos	Unaffected by proposed conveyance	---										Sensitive Areas Map Folio (KC 1990) documents this tributary as a Class 2 stream with salmonids.
9	09.0085B	Unnamed	Covington Creek	Black Diamond	Soos	Unaffected by proposed conveyance	---										Sensitive Areas Map Folio (KC 1990) documents Little Soos Creek as a Class 2 stream with salmonids.
9	09.0085B	Rock Creek Tributary.	Covington Creek	Black Diamond	Soos	Unaffected by proposed conveyance	---		KCDNR 2001a (likely)					KCDNR 2001a			Adult coho have been observed in a fish ladder.
9	09.0085F	Unnamed	Covington Creek	Covington	Soos	Unaffected by proposed conveyance	---										
9	09.0087	Jenkins Creek	Jenkins Creek	Covington	Soos	Alternative 1	Crosses and Parallels		Williams, KCDNR 2001a, KCSWM 1990	KCDNR 2001a (likely), KCSWM 1990				KCDNR 2001a, KCSWM 1990	KCDNR 2001a, KCSWM 1990		Chinook should be present due to suitable habitat and absence of barriers; presence has not been observed (KC DNR). Coho, cutthroat, and steelhead prefer to spawn in smaller streams, including Jenkins Cr. (KCSWM 1990). Sensitive Areas Map Folio (KC 1990) documents Jenkins Creek as a Class 2 stream with salmonids east of Covington Way; west of the arterial, Jenkins Cr. is a Class 1 stream.
9	09.0087C	Unnamed	Jenkins Creek	King County, North of Covington	Soos	Alternative 1	Crosses										
9	09.0088	Cranmar Creek	Jenkins Creek	King County, south of Covington	Soos	Alternative 1	Crosses		Williams, KCDNR 2001a, KCSWM 1990					KCDNR 2001a, KCSWM 1990	KCSWM 1990		Coho, cutthroat, and steelhead prefer to spawn in smaller streams, including Cranmar Cr. (KCSWM 1990). Sensitive Areas Map Folio (KC 1990) documents Cranmar Creek as a Class 2 stream with salmonids.
9	09.0089	Unnamed	Jenkins Creek	Covington	Soos	Alternative 1	Crosses		Williams, KCDNR 2001a					KCDNR 2001a	KCDNR 2001a (second-hand)		Steelhead are believed to be present based on second hand observations/info (KCDNR 2001a). Sensitive Areas Map Folio (KC 1990) documents this tributary as a Class 2 stream with salmonids.
9	09.0087E	Jenkins Creek Tributary	Jenkins Creek	King County, North of Covington and Maple Valley	Soos	Alternative 1	Parallels		KCDNR 2001a								
9	09.0087	Jenkins Creek	Jenkins Creek	Covington	Soos	Alternative 2	Crosses and Parallels		Williams, KCDNR 2001a, KCSWM 1990	KCDNR 2001a (likely), KCSWM 1990				KCDNR 2001a, KCSWM 1990	KCDNR 2001a, KCSWM 1990		Chinook should be present due to suitable habitat and absence of barriers; presence has not been observed (KC DNR). Coho, cutthroat, and steelhead prefer to spawn in smaller streams, including Jenkins Cr. (KCSWM 1990). Sensitive Areas Map Folio (KC 1990) documents Jenkins Creek as a Class 2 stream with salmonids east of Covington Way; west of the arterial, Jenkins Cr. is a Class 1 stream.
9	09.0087C	Unnamed	Jenkins Creek	King County, North of Covington	Soos	Alternative 2	Crosses										

Table 1. Mill Creek / Green River Sub-Regional Planning Area
Streams within the planning area and documented fish use

WRIA	Waterbody Number	Waterbody Name	Drainage Basin	Jurisdiction	Planning Zone	Alternative Name	Type	FISH SPECIES PRESENT									Comments
								Unknown	Coho	Chinook	Chum	Sockeye	Pink	Cutthroat	Steelhead	Char	
9	09.0088	Cranmar Creek	Jenkins Creek	King County, south of Covington	Soos	Alternative 2	Crosses		Williams, KCDNR 2001a, KCSWM 1990					KCDNR 2001a, KCSWM 1990	KCSWM 1990		Coho, cutthroat, and steelhead prefer to spawn in smaller streams, including Cranmar Cr. (KCSWM 1990). Sensitive Areas Map Folio (KC 1990) documents Cranmar Creek as a Class 2 stream with salmonids.
9	09.0089	Unnamed	Jenkins Creek	Covington	Soos	Alternative 2	Crosses		Williams, KCDNR 2001a					KCDNR 2001a	KCDNR 2001a (second-hand)		Steelhead are believed to be present based on second hand observations/info (KCDNR 2001a). Sensitive Areas Map Folio (KC 1990) documents this tributary as a Class 2 stream with salmonids.
9	09.0087E	Jenkins Creek Tributary	Jenkins Creek	King County, North of Covington and Maple Valley	Soos	Alternative 2	Parallels		KCDNR 2001a								
9	09.0087	Jenkins Creek	Jenkins Creek	Covington	Soos	Alternative 3	Crosses and Parallels		Williams, KCDNR 2001a, KCSWM 1990	KCDNR 2001a (likely), KCSWM 1990				KCDNR 2001a, KCSWM 1990	KCDNR 2001a, KCSWM 1990		Chinook should be present due to suitable habitat and absence of barriers; presence has not been observed (KC DNR). Coho, cutthroat, and steelhead prefer to spawn in smaller streams, including Jenkins Cr. (KCSWM 1990). Sensitive Areas Map Folio (KC 1990) documents Jenkins Creek as a Class 2 stream with salmonids east of Covington Way; west of the arterial, Jenkins Cr. is a Class 1 stream.
9	09.0087C	Unnamed	Jenkins Creek	King County, North of Covington	Soos	Alternative 3	Crosses										
9	09.0088	Cranmar Creek	Jenkins Creek	King County, south of Covington	Soos	Alternative 3	Crosses		Williams, KCDNR 2001a, KCSWM 1990					KCDNR 2001a, KCSWM 1990	KCSWM 1990		Coho, cutthroat, and steelhead prefer to spawn in smaller streams, including Cranmar Cr. (KCSWM 1990). Sensitive Areas Map Folio (KC 1990) documents Cranmar Creek as a Class 2 stream with salmonids.
9	09.0089	Unnamed	Jenkins Creek	Covington	Soos	Alternative 3	Crosses		Williams, KCDNR 2001a					KCDNR 2001a	KCDNR 2001a (second-hand)		Steelhead are believed to be present based on second hand observations/info (KCDNR 2001a). Sensitive Areas Map Folio (KC 1990) documents this tributary as a Class 2 stream with salmonids.
9	09.0087E	Jenkins Creek Tributary	Jenkins Creek	King County, North of Covington and Maple Valley	Soos	Alternative 3	Parallels		KCDNR 2001a								
9	09.0087	Jenkins Creek	Jenkins Creek	Covington	Soos	Alternative 4	Crosses and Parallels		Williams, KCDNR 2001a, KCSWM 1990	KCDNR 2001a (likely), KCSWM 1990				KCDNR 2001a, KCSWM 1990	KCDNR 2001a, KCSWM 1990		Chinook should be present due to suitable habitat and absence of barriers; presence has not been observed (KC DNR). Coho, cutthroat, and steelhead prefer to spawn in smaller streams, including Jenkins Cr. (KCSWM 1990). Sensitive Areas Map Folio (KC 1990) documents Jenkins Creek as a Class 2 stream with salmonids east of Covington Way; west of the arterial, Jenkins Cr. is a Class 1 stream.
9	09.0087C	Unnamed	Jenkins Creek	King County, North of Covington	Soos	Alternative 4	Crosses										

Table 1. Mill Creek / Green River Sub-Regional Planning Area
Streams within the planning area and documented fish use

WRIA	Waterbody Number	Waterbody Name	Drainage Basin	Jurisdiction	Planning Zone	Alternative Name	Type	FISH SPECIES PRESENT									Comments
								Unknown	Coho	Chinook	Chum	Sockeye	Pink	Cutthroat	Steelhead	Char	
9	09.0088	Cranmar Creek	Jenkins Creek	King County, south of Covington	Soos	Alternative 4	Crosses		Williams, KCDNR 2001a, KCSWM 1990					KCDNR 2001a, KCSWM 1990	KCSWM 1990		Coho, cutthroat, and steelhead prefer to spawn in smaller streams, including Cranmar Cr. (KCSWM 1990). Sensitive Areas Map Folio (KC 1990) documents Cranmar Creek as a Class 2 stream with salmonids.
9	09.0089	Unnamed	Jenkins Creek	Covington	Soos	Alternative 4	Crosses		Williams, KCDNR 2001a					KCDNR 2001a	KCDNR 2001a (second-hand)		Steelhead are believed to be present based on second hand observations/info (KCDNR 2001a). Sensitive Areas Map Folio (KC 1990) documents this tributary as a Class 2 stream with salmonids.
9	09.0087E	Jenkins Creek Tributary	Jenkins Creek	King County, North of Covington and Maple Valley	Soos	Alternative 4	Parallels		KCDNR 2001a								
9	09.0090	Unnamed	Jenkins Creek	Maple Valley	Soos	Unaffected by proposed conveyance improvements	---		Williams (likely), KCDNR 2001a					KCDNR 2001a (present according to Williams			Sensitive Areas Map Folio (KC 1990) documents this tributary as a Class 2 stream with salmonids.
9	09.A	Jenkins Creek Tributary.	Jenkins Creek	Maple Valley	Soos	Unaffected by proposed conveyance	---		KCDNR 2001a					KCDNR 2001a			
9	09.G	Unnamed	Lower Green River	King County, east of Auburn	Auburn	Alternative 1	Crosses										
9	09.G	Unnamed	Lower Green River	King County, east of Auburn	Auburn	Alternative 2	Crosses										
9	09.G	Unnamed	Lower Green River	King County, east of Auburn	Auburn	Alternative 4	Crosses										
9	09.0001	Green River	Lower Green River	Kent & Auburn	Kent	Parallel Alternative	Crosses		Williams, WDFW 1994, KCDNR 2001a	Williams, WDFW 1994, KCDNR 2001a	Williams, WDFW 1994, KCDNR 2001a	KCDNR 2001a	KCDNR 2001a	KCDNR 2001a	WDFW 1994 KCDNR 2001a		Chum and Steelhead are documented approx. east of tributary. 0070 (WDFW). The Green River is documented as a Class 1 Stream (KC 1990).
9	09.0001	Green River	Lower Green River	Kent & Auburn	Kent	Rerouting Alternative	Crosses		Williams, WDFW 1994, KCDNR 2001a	Williams, WDFW 1994, KCDNR 2001a	Williams, WDFW 1994, KCDNR 2001a	KCDNR 2001a	KCDNR 2001a	KCDNR 2001a	WDFW 1994 KCDNR 2001a		Chum and Steelhead are documented approx. east of tributary. 0070 (WDFW). The Green River is documented as a Class 1 Stream (KC 1990).
9	09.0045	Mullen Slough	Lower Green River	King County, west of Auburn	Auburn	Unaffected by proposed conveyance	---	Williams	KCDNR 2001a					KCDNR 2001a (likely)	KCDNR 2001a (likely)		Cutthroat and coho should be present b/c of suitable habitat, but are not due to an artificial barrier.
9	09.0047	Mullen Slough Tributary	Lower Green River	King County, west of Auburn	Auburn	Unaffected by proposed conveyance	---	Williams	KCDNR 2001a					KCDNR 2001a (likely)			Cutthroat should be present due to suitable habitat and absence of barriers; presence has not been observed.
9	09.0048	Mullen Slough Tributary	Lower Green River	King County, west of Auburn	Auburn	Unaffected by proposed conveyance	---		KCDNR 2001a					KCDNR 2001a (likely)			
9	09.0049	Mullen Slough Tributary	Lower Green River	King County, west of Auburn	Auburn	Unaffected by proposed conveyance	---										

Table 1. Mill Creek / Green River Sub-Regional Planning Area
Streams within the planning area and documented fish use

WRIA	Waterbody Number	Waterbody Name	Drainage Basin	Jurisdiction	Planning Zone	Alternative Name	Type	FISH SPECIES PRESENT									Comments
								Unknown	Coho	Chinook	Chum	Sockeye	Pink	Cutthroat	Steelhead	Char	
9	09.0061	Olson Creek	Lower Green River	Auburn	Auburn	Unaffected by proposed conveyance improvements	---		KCDNR 2001a					KCDNR 2001a (second-hand)			Cutthroat are thought to be present based on second hand observations/info (KCDNR 2001a). Sensitive Areas Map Folio (KC 1990) documents Olson Creek as a Class 2 stream with salmonids.
9	09.0066	Unnamed	Lower Green River	Auburn	Auburn	Unaffected by proposed conveyance	---										
9	09.0067	Unnamed	Lower Green River	Auburn	Auburn	Unaffected by proposed conveyance	---										
9	09.0068	Cobble Creek	Lower Green River	King County, east of Auburn	Auburn	Unaffected by proposed conveyance improvements	---		KCDNR 2001a (likely)	KCDNR 2001a (barrier prevents presence)				KCDNR 2001a (barrier prevents presence)			Cutthroat and Chinook should be present b/c of suitable habitat, but are not due to artificial barrier. Coho should be present due to suitable habitat and absence of barriers; presence has not been observed.
9	09.0069	Lee Hill Creek	Lower Green River	King County, east of Auburn	Auburn	Unaffected by proposed conveyance improvements	---	Williams	KCDNR 2001a	KCDNR 2001a (barrier prevents presence)				KCDNR 2001a (likely)			Cutthroat should be present due to suitable habitat and absence of barriers; presence has not been observed. Sockeye are blocked by an artificial barrier.
9	09.0043	Midway Creek Tributary	Lower Green River	Kent	Kent	Unaffected by proposed conveyance improvements	---										
9	09.0046	Mullen Slough Tributary	Lower Green River	King County, south of Kent	Kent	Unaffected by proposed conveyance improvements	---										
9	09.0071A	Unnumbered Tributary. to Pautzke Slough	Middle Green River	Auburn	Auburn	Unaffected by proposed conveyance improvements	---		KCDNR 2001a (barrier prevents presence)					KCDNR 2001a (barrier prevents presence)			Cutthroat and coho should be present b/c of suitable habitat, but are not due to an artificial barrier.
9	09.0051F	Unnamed	Mill Creek	Auburn	Auburn	Parallel Alternative	Crosses										
9	09.0070	Unnamed	Mill Creek	Auburn	Auburn	Parallel Alternative	Crosses										
9	09.0051	Mill Creek	Mill Creek	Kent & Auburn	Kent & Auburn	Parallel Alternative	Crosses		Williams, KCDNR 2001a	KCDNR 2001a	KCDNR 2001a			KCDNR 2001a	KCDNR 2001a		Sensitive Areas Map Folio (KC 1990) documents Mill Creek as a Class 2 stream with salmonids.
9	09.0051E	Unnamed	Mill Creek	Auburn	Auburn	Rerouting Alternative	Crosses										
9	09.0051	Mill Creek	Mill Creek	Kent & Auburn	Kent & Auburn	Rerouting Alternative	Crosses		Williams, KCDNR 2001a	KCDNR 2001a	KCDNR 2001a			KCDNR 2001a	KCDNR 2001a		Sensitive Areas Map Folio (KC 1990) documents Mill Creek as a Class 2 stream with salmonids.
9	09.0053	Unnamed	Mill Creek	King County, west of Auburn	Kent & Auburn	Rerouting Alternative	Crosses and Parallels		Williams (likely), KCDNR 2001a (barrier prevents presence)					KCDNR 2001a (barrier prevents presence)			Cutthroat should be present b/c of suitable habitat, but are not due to an artificial barrier. Coho should be present due to suitable habitat and absence of barriers; presence has not been observed
9	09.0054	Unnamed	Mill Creek	Auburn	Auburn	Unaffected by proposed conveyance	---										

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Streams within the planning area and documented fish use

WRIA	Waterbody Number	Waterbody Name	Drainage Basin	Jurisdiction	Planning Zone	Alternative Name	Type	FISH SPECIES PRESENT									Comments
								Unknown	Coho	Chinook	Chum	Sockeye	Pink	Cutthroat	Steelhead	Char	
9	09.0065	Unnamed	Mill Creek	Auburn	Auburn	Unaffected by proposed conveyance	---										
9	09.B	Unnamed	Mill Creek	Auburn	Auburn	Unaffected by proposed conveyance	---		KCDNR 2001a								
9	09.C	Unnamed	Mill Creek	Auburn	Auburn	Unaffected by proposed conveyance improvements	---		KCDNR 2001a (barrier prevents presence)								Coho should b present b/c of suitable habitat, but are not due to artificial barrier.
9	09.0056	Unnamed	Mill Creek	Kent	Kent	Unaffected by proposed conveyance	---		KCDNR 2001a	KCDNR 2001a				KCDNR 2001a	KCDNR 2001a		
9	09.E	Unnamed	Mill Creek / White River	Auburn	Auburn	Parallel Alternative	Parallels										
9	09.0054A	Unnamed	Mill Creek and White River	Auburn	Auburn	Rerouting Alternative	Crosses and Parallels										
9	09.F	Unnamed	Mill Creek and White River	Auburn	Auburn	Rerouting Alternative	Crosses and Parallels										
9	09.H	Unnamed	Soos Creek	Kent	Soos	Alternative 1	Crosses										
9	09.0072	Big Soos Creek	Soos Creek	King County, east of Auburn	Soos	Alternative 2	Crosses		Williams, WDFW 1994, KCDNR 2001a, KCSWM 1990	Williams KCDNR 2001a, KCSWM 1990	Williams, KCDNR 2001a (present according to Williams), KCSWM 1990			KCDNR 2001a	KCDNR 2001a		Chinook and chum spawners prefer the reaches below River Mile 6.0, where flows are larger (KCSWM 1990). Coho spawn in most of the available tributaries of the Soos Creek system. Sensitive Areas Map Folio (KC 1990) documents Big Soos Creek as a Class 2 stream with salmonids north of its confluence with Little Soos Creek, the rest of the stream is documented as a Class 1 Stream.
9	09.0073	Soosette Creek	Soos Creek	Kent	Soos	Alternative 2	Crosses		Williams, KCDNR 2001a	KCSWM 1990				KCDNR 2001a	KCDNR 2001a		Sporadic chinook spawning has been observed (KCSWM 1990). Sensitive Areas Map Folio (KC 1990) documents Soosette Creek as a Class 2 stream with salmonids.
9	09.0091	Unnamed	Soos Creek	Kent	Soos	Alternative 2	Crosses		Williams, WDFW 1994, KCDNR 2001a								Sensitive Areas Map Folio (KC 1990) documents this unnamed tributary as a Class 2 stream with salmonids.
9	09.0072	Big Soos Creek	Soos Creek	King County, east of Auburn	Soos	Alternative 3	Crosses		Williams, WDFW 1994, KCDNR 2001a, KCSWM 1990	Williams KCDNR 2001a, KCSWM 1990	Williams, KCDNR 2001a (present according to Williams), KCSWM 1990			KCDNR 2001a	KCDNR 2001a		Chinook and chum spawners prefer the reaches below River Mile 6.0, where flows are larger (KCSWM 1990). Coho spawn in most of the available tributaries of the Soos Creek system. Sensitive Areas Map Folio (KC 1990) documents Big Soos Creek as a Class 2 stream with salmonids north of its confluence with Little Soos Creek, the rest of the stream is documented as a Class 1 Stream.
9	09.0073	Soosette Creek	Soos Creek	Kent	Soos	Alternative 3	Crosses		Williams, KCDNR 2001a	KCSWM 1990				KCDNR 2001a	KCDNR 2001a		Sporadic chinook spawning has been observed (KCSWM 1990). Sensitive Areas Map Folio (KC 1990) documents Soosette Creek as a Class 2 stream with salmonids.

Table 1. Mill Creek / Green River Sub-Regional Planning Area
Streams within the planning area and documented fish use

WRIA	Waterbody Number	Waterbody Name	Drainage Basin	Jurisdiction	Planning Zone	Alternative Name	Type	FISH SPECIES PRESENT									Comments
								Unknown	Coho	Chinook	Chum	Sockeye	Pink	Cutthroat	Steelhead	Char	
9	09.0075	Unnamed	Soos Creek	Kent	Soos	Alternative 3	Crosses	Williams	KCDNR 2001a					KCDNR 2001a			Sensitive Areas Map Folio (KC 1990) documents this tributary as a Class 2 stream with salmonids.
9	09.0091	Unnamed	Soos Creek	Kent	Soos	Alternative 3	Crosses		Williams, WDFW 1994, KCDNR 2001a								Sensitive Areas Map Folio (KC 1990) documents this unnamed tributary as a Class 2 stream with salmonids.
9	09.0072	Big Soos Creek	Soos Creek	King County, east of Auburn	Soos	Alternative 4	Crosses		Williams, WDFW 1994, KCDNR 2001a, KCSWM 1990	Williams KCDNR 2001a, KCSWM 1990	Williams, KCDNR 2001a (present according to Williams), KCSWM 1990			KCDNR 2001a	KCDNR 2001a		Chinook and chum spawners prefer the reaches below River Mile 6.0, where flows are larger (KCSWM 1990). Coho spawn in most of the available tributaries of the Soos Creek system. Sensitive Areas Map Folio (KC 1990) documents Big Soos Creek as a Class 2 stream with salmonids north of its confluence with Little Soos Creek, the rest of the stream is documented as a Class 1 Stream.
9	09.0073	Soosette Creek	Soos Creek	Kent	Soos	Alternative 4	Crosses		Williams, KCDNR 2001a	KCSWM 1990				KCDNR 2001a	KCDNR 2001a		Sporadic chinook spawning has been observed (KCSWM 1990). Sensitive Areas Map Folio (KC 1990) documents Soosette Creek as a Class 2 stream with salmonids.
9	09.0075	Unnamed	Soos Creek	Kent	Soos	Alternative 4	Crosses	Williams	KCDNR 2001a					KCDNR 2001a			Sensitive Areas Map Folio (KC 1990) documents this tributary as a Class 2 stream with salmonids.
9	09.0091	Unnamed	Soos Creek	Kent	Soos	Alternative 4	Crosses		Williams, WDFW 1994, KCDNR 2001a								Sensitive Areas Map Folio (KC 1990) documents this unnamed tributary as a Class 2 stream with salmonids.
9	09.0076	Unnamed	Soos Creek	Kent	Soos	Unaffected by proposed conveyance improvements	---		Williams (likely), KCDNR 2001a								
9	09.0077	Unnamed	Soos Creek	Kent	Soos	Unaffected by proposed conveyance improvements	---										
9	09.0078	Unnamed	Soos Creek	Kent	Soos	Unaffected by proposed conveyance improvements	---										
9	09.0079	Unnamed	Soos Creek	Kent	Soos	Unaffected by proposed conveyance improvements	---										
9	09.0081	Unnamed	Soos Creek	Kent	Soos	Unaffected by proposed conveyance improvements	---		KCDNR 2001a					KCDNR 2001a (present according to Williams			Sensitive Areas Map Folio (KC 1990) documents Little Soos Creek as a Class 2 stream with salmonids.
9	09.0082	Unnamed	Soos Creek	Kent	Soos	Unaffected by proposed conveyance improvements	---		KCDNR 2001a (present according to Williams)					KCDNR 2001a			

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WRIA	Waterbody Number	Waterbody Name	Drainage Basin	Jurisdiction	Planning Zone	Alternative Name	Type	FISH SPECIES PRESENT									Comments
								Unknown	Coho	Chinook	Chum	Sockeye	Pink	Cutthroat	Steelhead	Char	
9	09.0091A	Unnamed	Soos Creek	Kent	Soos	Unaffected by proposed conveyance	---										Sensitive Areas Map Folio (KC 1990) documents this tributary as a Class 2 stream with salmonids.
9	09.0092	Little Soos Creek	Soos Creek	Covington	Soos	Unaffected by proposed conveyance improvements	---		Williams, WDFW 1994, KCDNR 2001a	KCDNR 2001a, KCSWM 1990				KCDNR 2001a	KCDNR 2001a		Sporadic chinook spawning has been observed (KCSWM 1990). Sensitive Areas Map Folio (KC 1990) documents Little Soos Creek as a Class 2 stream with salmonids.
9	09.D	Unnamed	Soos Creek	Kent	Soos	Unaffected by proposed conveyance	---										Sensitive Areas Map Folio (KC 1990) documents this tributary as a Class 2 stream with salmonids.
9	09.0005	Springbrook Creek	Springbrook Creek	Kent	Kent	Parallel Alternative	Crosses		Williams, WDFW 1994, KCDNR 2001a (present according to Williams)					KCDNR 2001a	KCDNR 2001a		Sensitive Areas Map Folio (KC 1990) documents Springbrook Creek as a Class 2 stream with salmonids.
9	09.0012	Unnamed	Springbrook Creek	Kent	Kent	Parallel Alternative	Crosses & Parallels		Williams (likely)								Sensitive Areas Map Folio (KC 1990) documents this tributary as a Class 2 stream with salmonids.
9	09.0015	Unnamed	Springbrook Creek	Kent	Kent	Parallel Alternative	Crosses		Williams (likely)								Sensitive Areas Map Folio (KC 1990) documents this tributary as a Class 2 stream with salmonids.
9	09.0024	South Fork Springbrook Creek	Springbrook Creek	Kent	Kent	Parallel Alternative	Crosses		Williams (likely)								Sensitive Areas Map Folio (KC 1990) documents this tributary as a Class 2 stream with salmonids.
9	09.0005	Springbrook Creek	Springbrook Creek	Kent	Kent	Rerouting Alternative	Crosses		Williams, WDFW 1994, KCDNR 2001a (present according to Williams)					KCDNR 2001a	KCDNR 2001a		Sensitive Areas Map Folio (KC 1990) documents Springbrook Creek as a Class 2 stream with salmonids.
9	09.0012	Unnamed	Springbrook Creek	Kent	Kent	Rerouting Alternative	Crosses & Parallels		Williams (likely)								Sensitive Areas Map Folio (KC 1990) documents this tributary as a Class 2 stream with salmonids.
9	09.0015	Unnamed	Springbrook Creek	Kent	Kent	Rerouting Alternative	Crosses		Williams (likely)								Sensitive Areas Map Folio (KC 1990) documents this tributary as a Class 2 stream with salmonids.
9	09.0024	South Fork Springbrook Creek	Springbrook Creek	Kent	Kent	Rerouting Alternative	Crosses		Williams (likely)								Sensitive Areas Map Folio (KC 1990) documents this tributary as a Class 2 stream with salmonids.
9	09.0006	Unnamed	Springbrook Creek	King County, east of Kent	Kent	Unaffected by proposed conveyance	---		Williams								
9	09.0007	Unnamed	Springbrook Creek	Tukwila	Kent	Unaffected by proposed conveyance	---										
9	09.0009	Unnamed	Springbrook Creek	Tukwila	Kent	Unaffected by proposed conveyance	---										

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WRIA	Waterbody Number	Waterbody Name	Drainage Basin	Jurisdiction	Planning Zone	Alternative Name	Type	FISH SPECIES PRESENT									Comments
								Unknown	Coho	Chinook	Chum	Sockeye	Pink	Cutthroat	Steelhead	Char	
9	09.0010	Unnamed	Springbrook Creek	Tukwila	Kent	Unaffected by proposed conveyance	---										
9	09.0012A	Unnamed	Springbrook Creek	Kent	Kent	This tributary will be unaffected by proposed conveyance	---										
9	09.0014	Unnamed	Springbrook Creek	Kent	Kent	Unaffected by proposed conveyance	---										
9	09.0020	Unnamed	Springbrook Creek	Kent	Kent	Unaffected by proposed conveyance	---		Williams								Sensitive Areas Map Folio (KC 1990) documents this tributary as a Class 2 stream with salmonids.
9	09.0021	Unnamed	Springbrook Creek	King County, east of Kent	Kent	Unaffected by proposed conveyance	---										
9	09.0022	Middle Fork Garrison Creek	Springbrook Creek	Kent	Kent	Unaffected by proposed conveyance	---		Williams								Sensitive Areas Map Folio (KC 1990) documents this tributary as a Class 2 stream with salmonids.
9	09.0023	North Fork Garrison Creek	Springbrook Creek	Kent	Kent	Unaffected by proposed conveyance	---		Williams								Sensitive Areas Map Folio (KC 1990) documents this tributary as a Class 2 stream with salmonids.
9	09.0025	South Fork Garrison Creek	Springbrook Creek	Kent	Kent	Unaffected by proposed conveyance	---										Sensitive Areas Map Folio (KC 1990) documents this tributary as a Class 2 stream with salmonids.
9	09.0026	Unnamed	Springbrook Creek	Kent	Kent	Unaffected by proposed conveyance	---										
9	09.0027	Unnamed	Springbrook Creek	Kent	Kent	Unaffected by proposed conveyance	---										
9	09.0028	Unnamed	Springbrook Creek	Kent	Kent	Unaffected by proposed conveyance	---		Williams (likely)								
9	09.0029	Unnamed	Springbrook Creek	Kent	Kent	Unaffected by proposed conveyance	---										
9	09.0030	Unnamed	Springbrook Creek	Kent	Kent	Unaffected by proposed conveyance	---										
9	09.0031	Unnamed	Springbrook Creek	Kent	Kent	Unaffected by proposed conveyance	---										
10	10.0031	White River	White River	Auburn & Pacific	Auburn	Unaffected by proposed conveyance improvements	---		Williams, WDFW 1994, Kerwin	Williams WDFW 1994, Kerwin	WDFW 1994, Williams, Kerwin	Kerwin	Williams, Kerwin		WDFW 1994, Kerwin	Kerwin	Only Winter Steelhead are documented (WDFW). Areas of the White River are documented as a Class 1 stream and some areas are Class 2, with salmonids (KC
10	10.0032	Unnamed	White River	Pacific	Auburn	Unaffected by proposed conveyance	---		Williams		Williams						
10	10.0032A	Unnamed	White River	Auburn	Auburn	Unaffected by proposed conveyance	---										

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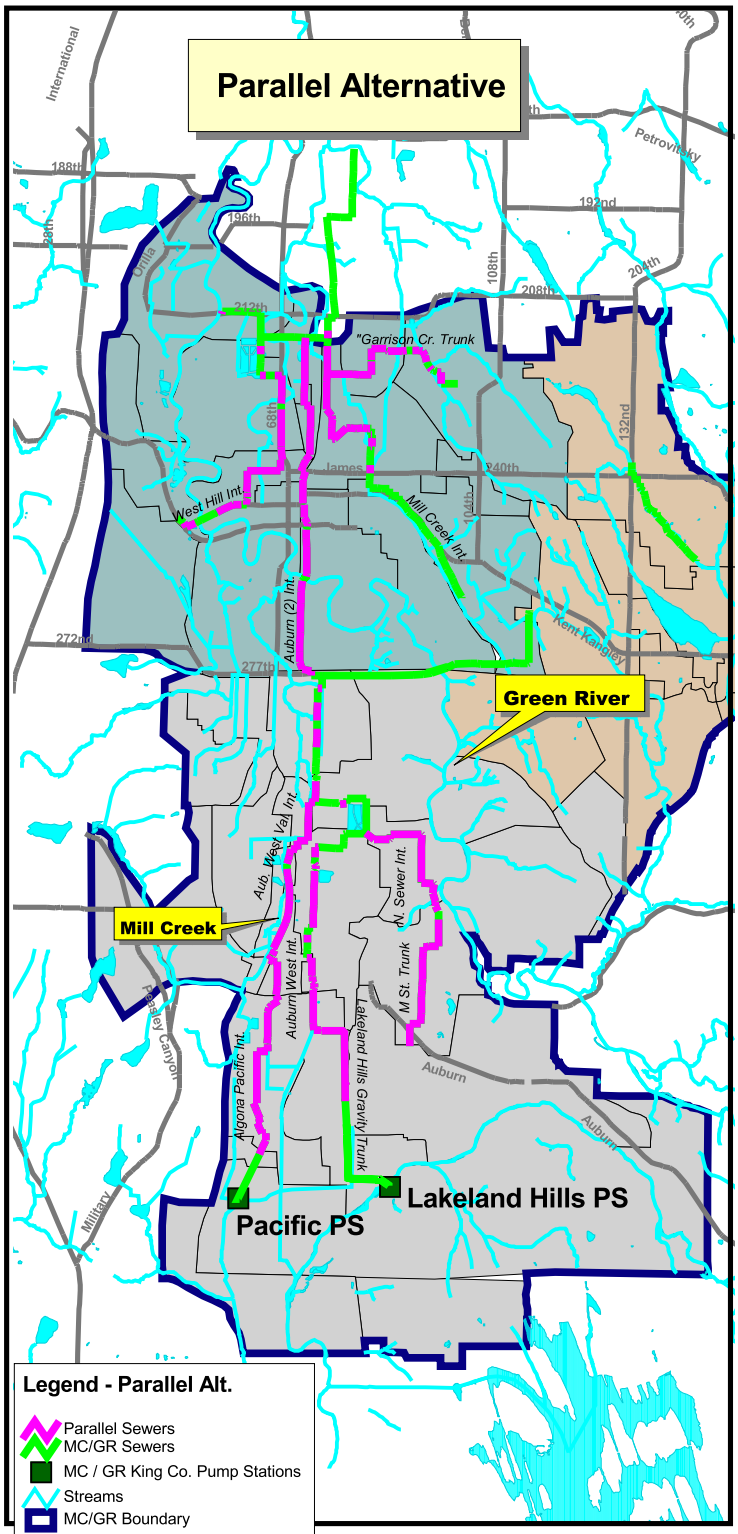
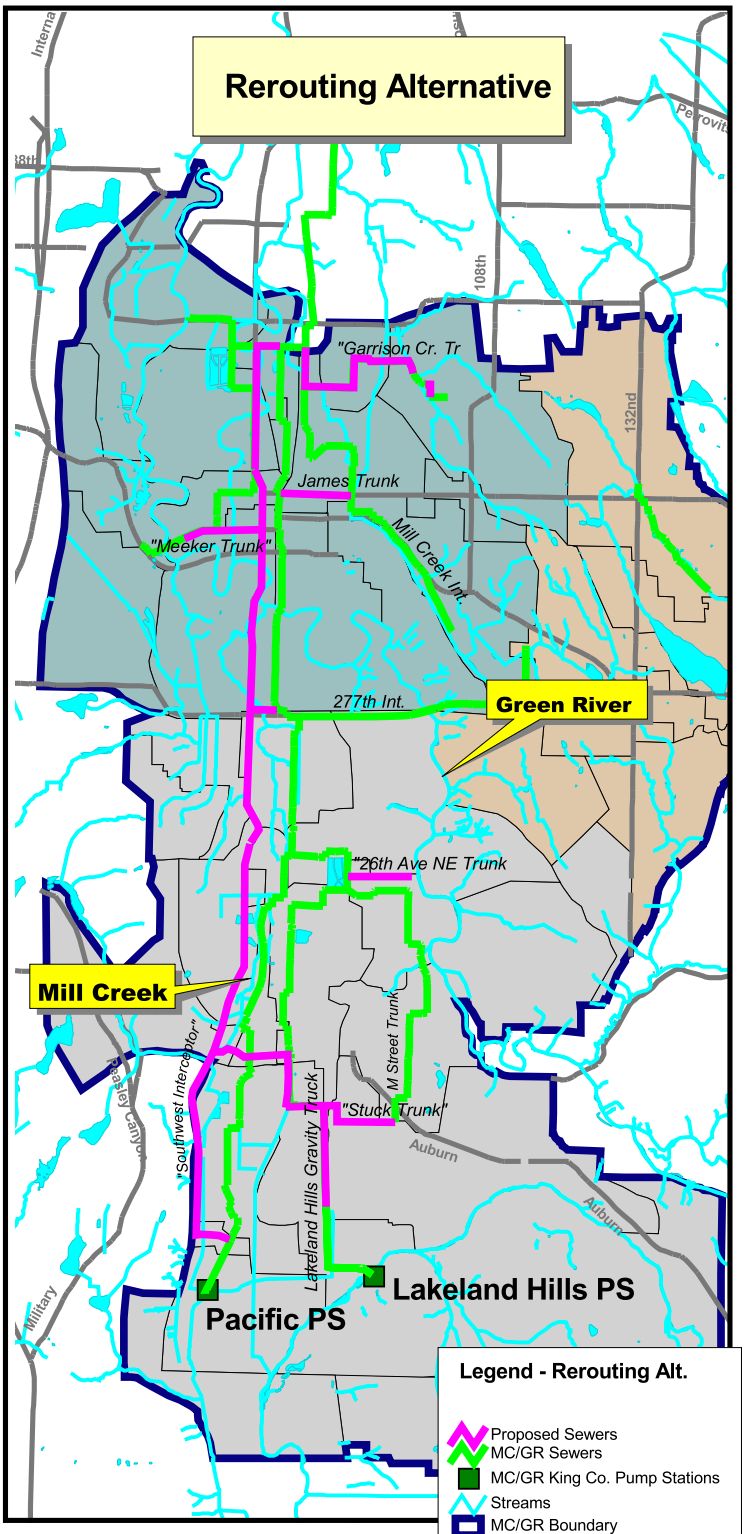
WRIA	Waterbody Number	Waterbody Name	Drainage Basin	Jurisdiction	Planning Zone	Alternative Name	Type	FISH SPECIES PRESENT									Comments
								Unknown	Coho	Chinook	Chum	Sockeye	Pink	Cutthroat	Steelhead	Char	
10	10.0042	Bowman Creek	White River	Auburn	Auburn	Unaffected by proposed conveyance	---		Williams		Williams (likely)						
10	10.0043	Unnamed	White River	Auburn	Auburn	Unaffected by proposed conveyance	---										
10	10.0044	Unnamed	White River	Auburn	Auburn	Unaffected by proposed conveyance	---										
10	10.0045	Unnamed	White River	Auburn	Auburn	Unaffected by proposed conveyance	---										





Map data shown here are the property of the sources listed below. Inaccuracies may exist, and Adolfson Associates, Inc. implies no warranties or guarantees regarding any aspect of data depiction.

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1 0 1 2 Miles

Source: King County Department of Natural Resources, Wastewater Treatment Division

Edits by: DML

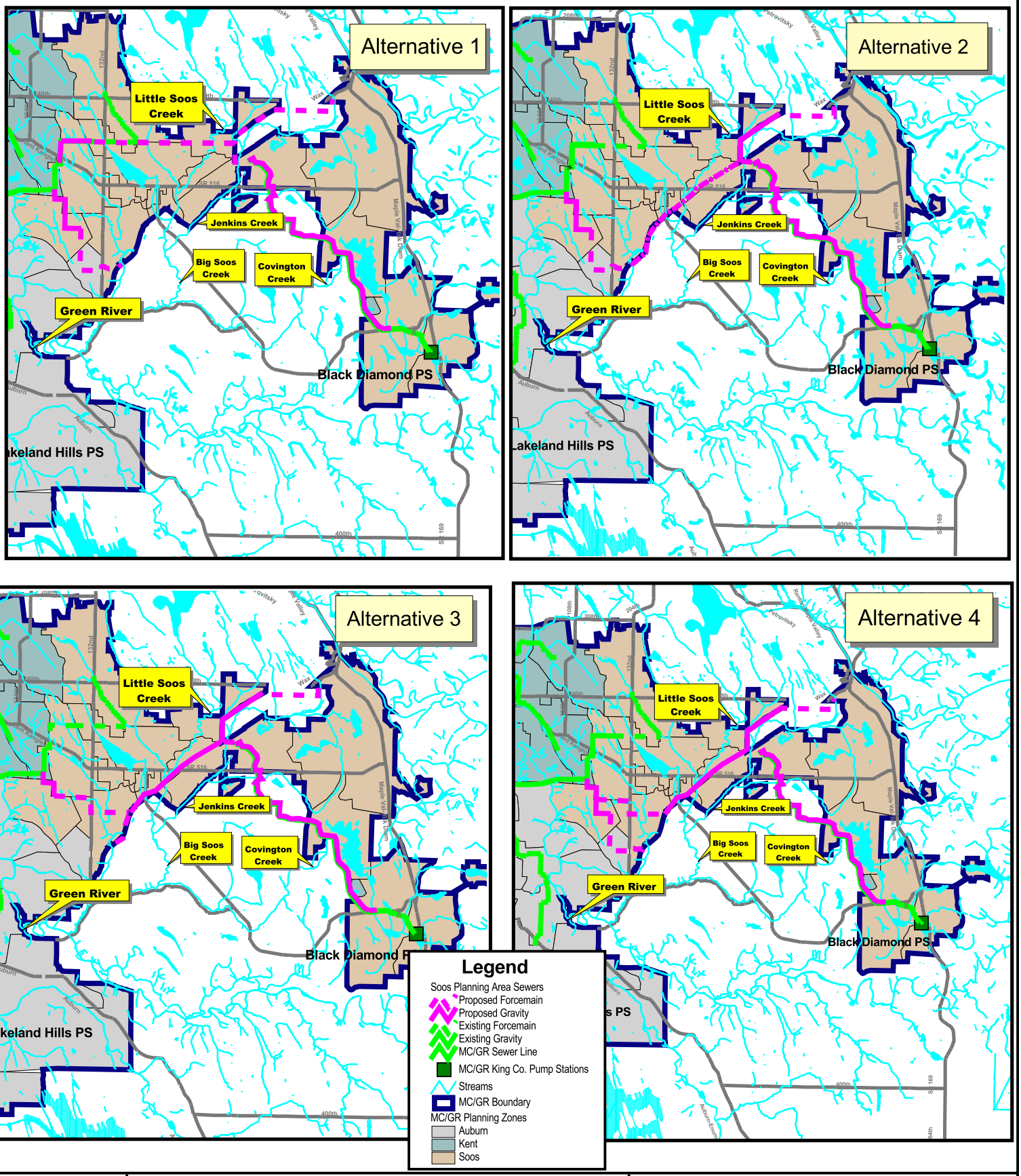
Date: 6/18/01

Figure 1

Stream Crossings

Alternatives for Auburn and Kent Planning Zones
MC/GR Subregional Planning Area

King County, WA



N

2 0 2 4 Miles

Map data shown here are the property of the sources listed below. Inaccuracies may exist, and Adolfson Associates, Inc. implies no warranties or guarantees regarding any aspect of data depiction.

Source: King County Department of Natural Resources, Wastewater Treatment Division

Edits: DML
Date: 6/18/01

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Figure 2

Stream Crossings

Alternatives for the Soos Planning Zone MC/GR Subregional Planning Area

King County, WA