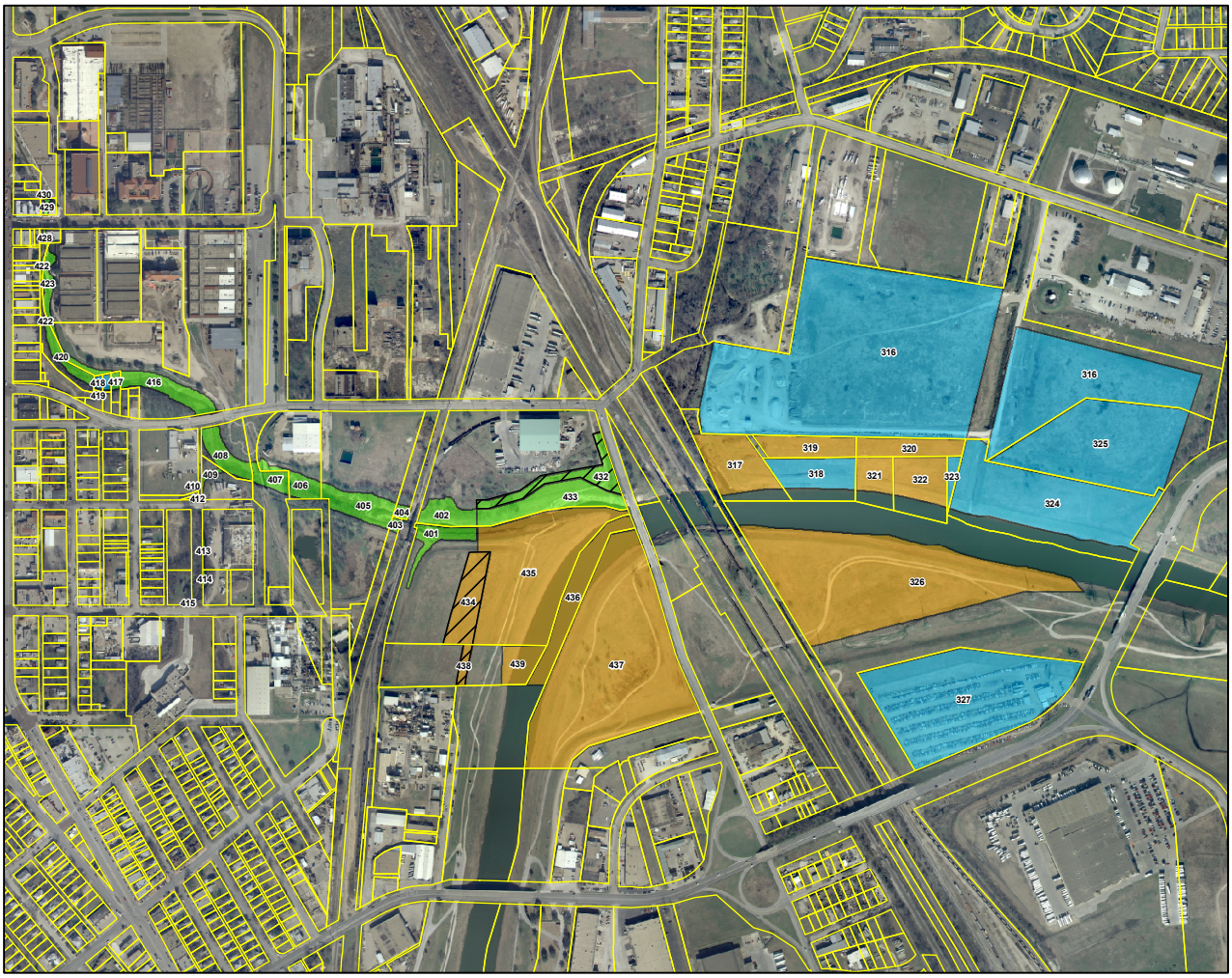

Project Report Appendix B

Figure 3 - Modified Project Samuels Avenue Dam/ Marine Creek Real Estate

Legend

GENERAL

- BYPASS CHANNEL
- TAD PROPERTY BOUNDARIES
- PERMANENT EASEMENT
- TEMPORARY EASEMENT
- CORPS PROJECT

OWNERSHIP

- TRWD PROPERTY
- COFW PROPERTY
- TARRANT COUNTY PROPERTY
- PRIVATE PROPERTY

N

0 250 500 1,000 Feet

Aerial Photography Date: January 2005

US Army Corps of Engineers
Fort Worth District

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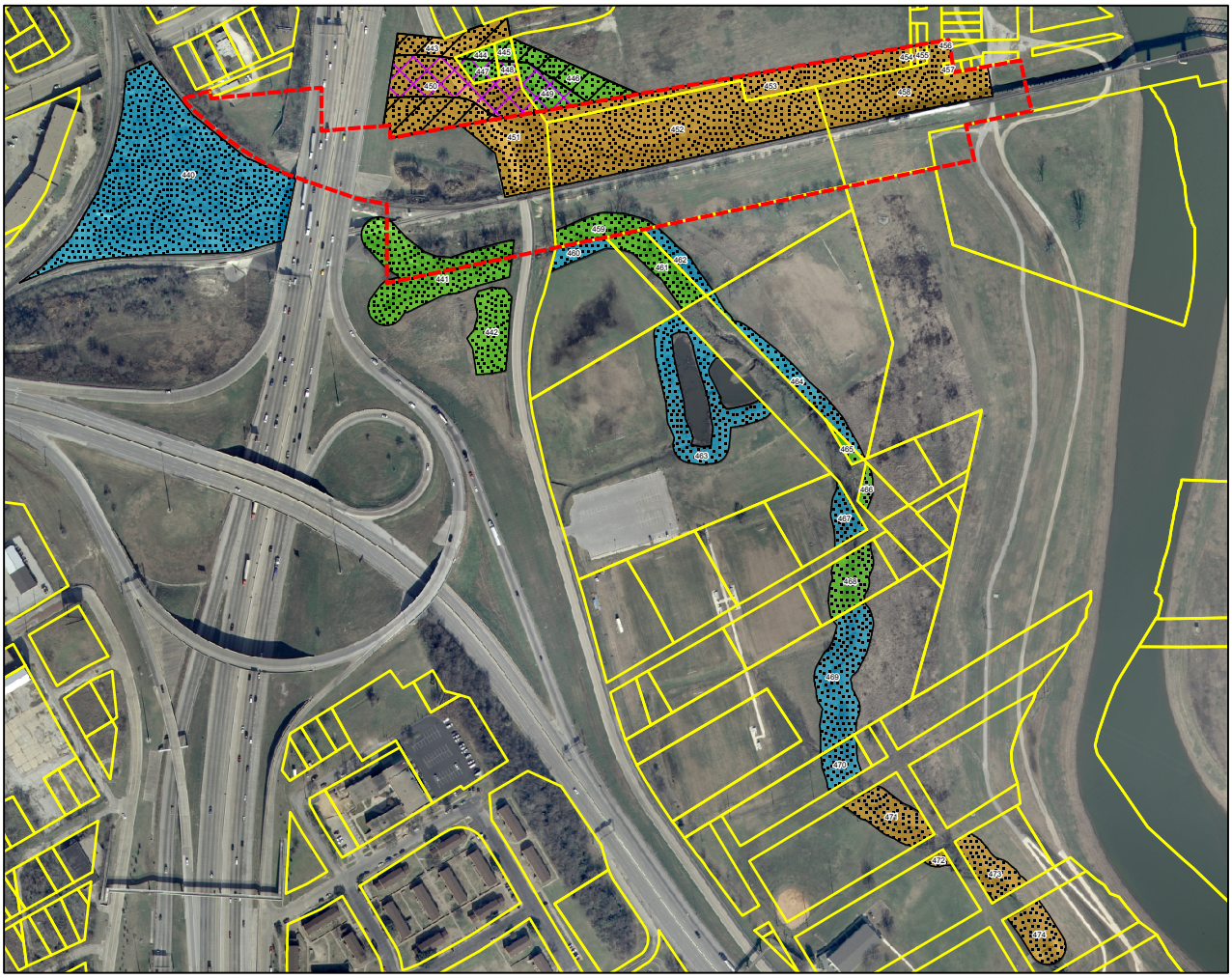
As of 4/2/08



Project Report
Appendix B

Figure 4 - Modified Project
Ham Branch Real Estate

Legend

GENERAL

- BYPASS CHANNEL
- TAD PROPERTY BOUNDARIES
- EXISTING TRWD EASEMENT
- PERMANENT EASEMENT
- TEMPORARY EASEMENT
- CORPS PROJECT

OWNERSHIP

- TRWD PROPERTY
- COFW PROPERTY
- TARRANT COUNTY PROPERTY
- PRIVATE PROPERTY

N

0 125 250 500 Feet

Aerial Photography Date: January 2005

US Army Corps of Engineers
Fort Worth District

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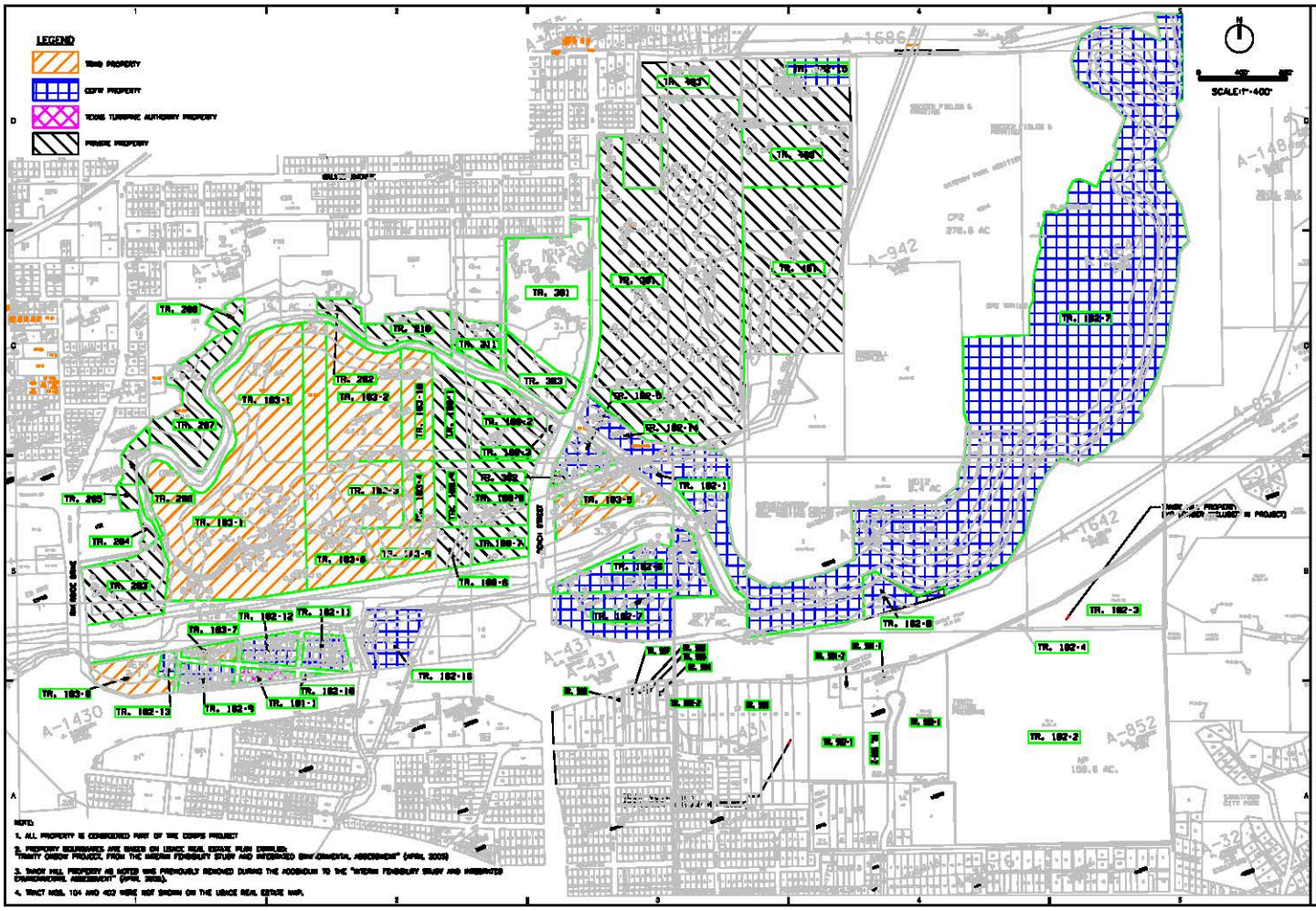
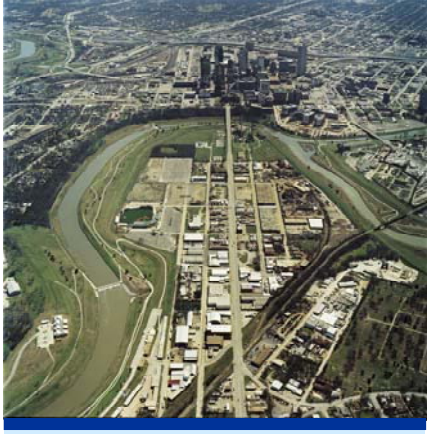
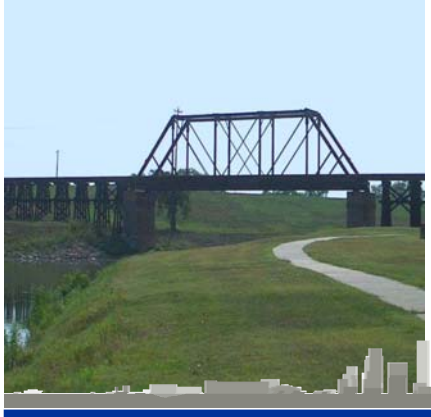
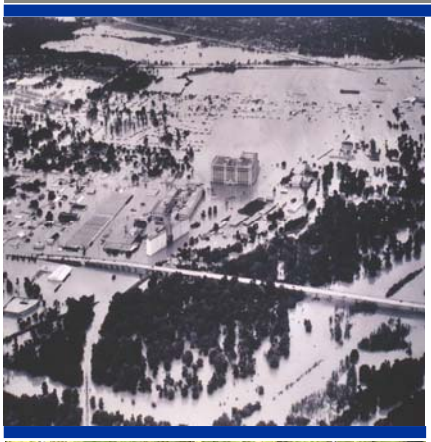
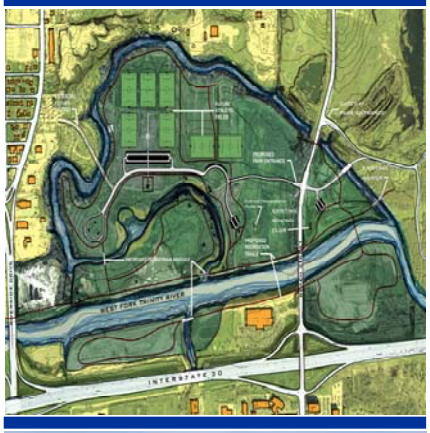
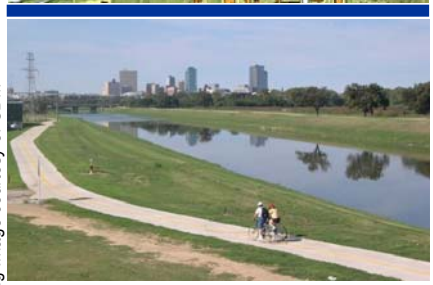

LEGEND
TRWD PROPERTY
CCFW PROPERTY
TEXAS TURNPIKE AUTHORITY PROPERTY
PRIVATE PROPERTY
SCALE: 1" = 400'
TR. 103-1
TR. 103-2
TR. 103-3
TR. 103-5
TR. 103-6
TR. 103-7
TR. 103-8
TR. 102-1
TR. 102-2
TR. 102-3
TR. 102-4
TR. 102-6
TR. 102-7
TR. 102-8
TR. 102-9
TR. 102-10
TR. 102-11
TR. 102-12
TR. 102-13
TR. 102-16
TR. 101-1
A-1686
A-1659
A-942
A-1642
A-1430
A-852
A-431
A-43
A-148
A-85
A-32
CP2
278.6 AC
150.6 AC.
BOCA STREET
BIG MUDDY DRIVE
NOTES:
1. ALL PROPERTY IS CONSIDERED PART OF THE CORPS PROJECT
2. PROPERTY BOUNDARIES ARE BASED ON LEASE REAL ESTATE PLAN DRAWING.
"TRINITY OXBOW PROJECT, FROM THE MEDIAN FEASIBILITY STUDY AND INTEGRATED ENVIRONMENTAL ASSESSMENT" (APRIL 2003)
3. TRACT NILL PROPERTY AS NOTED WAS PREVIOUSLY REMOVED DURING THE ADDENDUM TO THE "INTERIM FEASIBILITY STUDY AND INTEGRATED ENVIRONMENTAL ASSESSMENT" (APRIL 2004).
4. TRACT NOS. 104 AND 402 WERE NOT SHOWN ON THE LEASE REAL ESTATE MAP.
US Army Corps of Engineers Fort Worth District
CDM
FORT WORTH CENTRAL CITY
PROJECT REPORT
MODIFIED PROJECT
RIVERSIDE OXBOW - GATEWAY PARK REAL ESTATE
SHEET IDENTIFICATION
APP B
Fig No. 5











Rendering Image courtesy of CDM

Upper Trinity River
Central City
Fort Worth, Texas

Cost and Schedule Risk Analysis Report

Prepared by:

Risk Strategics, LLC

On behalf of:

Camp Dresser & McKee Inc.

April 2008

Table of Contents

Section 1 Purpose and Scope 1
Section 2 FWCC Project Background 1
Section 3 Risk Analysis Process 2
Section 3.1 Identify and Assess Risk Factors 3
Section 3.2 Quantify Risk Factor Impacts 3
Section 3.3 Analyze Contingency 4
Section 4 Risk Analysis Results 5
Section 4.1 Risk Register 6
Section 4.2 Cost Contingency 6
Section 4.3 Schedule Contingency 32
Section 5 Risk Management Recommendations 32

List of Tables

Table 1 Risk Register 7
Table 2 WBS/Risk Factor Crosswalk 16
Table 3 Total Project Cost Contingency 25
Table 4 Cost Contingency by Feature 27
Table 5 Contingency Allocation Table 29
Table 6 Cost Risk Factor Sensitivity Analysis 31
Table 7 Total Project Schedule Contingency 33
Table 8 Schedule Sensitivity Analysis 34

List of Figures

Figure 1 Total Project Cost with Confidence Levels 26
Figure 2 Project Risk Management Process Map 35
Figure 3 Project Performance Measurement, Assessment and Planning Process Map 36

List of Appendices

Appendix A Cost Estimate
Appendix B Schedule
Appendix C Cost Risk Factor Probability Distributions
Appendix D Cost Contingency Simulation Report
Appendix E Schedule Critical Path Stress Tests
Appendix F Schedule Risk Factor Probability Distributions
Appendix G Schedule Contingency Simulation Report

1. Purpose and Scope

The primary purpose of the Cost and Schedule Risk Analysis (CSRA) described in this report is to quantify contingencies for the Upper Trinity River Central City Project located in Fort Worth, Texas (FWCC Project). The scope of the report includes both cost estimate and schedule contingencies and is based on probabilistic risk analysis methods. The results are intended to provide project leadership with contingency information for scheduling, budgeting, and project control purposes, as well as to provide tools to support decision making and risk management as the project progresses through planning and implementation. To fully recognize its benefits, CSRA should be considered as an ongoing process conducted concurrent to, and iteratively with, other important project processes such as scope and execution plan development, resource planning, procurement planning, cost estimating, budgeting and scheduling.

The CSRA is a requirement only for the portion of the project that is currently federally-authorized (as described further in Section 2); however, federal risks are probably better understood within the context, objectives and constraints of the project in its entirety. Therefore, the scope of the CSRA includes the complete FWCC Project and results are provided for both federal and non-federal project scopes.

In addition to broadly defined risk analysis standards and recommended practices, the CSRA was performed to meet the requirements and recommendations of the following documents and sources:

- *Cost and Schedule Risk Analysis Process* guidance prepared by the U.S. Army Corps of Engineers (USACE), dated August 2007.
- *Application of Cost Risk Analysis Methods to Develop Contingencies for Civil Works Total Project Costs* memorandum from Major General Don T. Riley (US Army Director of Civil Works), dated July 3, 2007.
- *Application of Cost Risk Analysis Methods to Develop Contingencies for Civil Works Total Project Costs* engineering and construction bulletin issued by James C. Dalton, P.E. (Chief, Engineering and Construction, Directorate of Civil Works), dated September 10, 2007.
- Project-specific, independent technical review comments, suggestions and recommendations provided by Walla Walla District personnel.

2. FWCC Project Background

The FWCC Project is a multi-agency endeavor involving several federal agencies (primarily the USACE) and at least three non-Federal partners (Tarrant Regional Water District, City of Fort Worth and Tarrant County). The primary focus of the FWCC Project is to enhance existing levels of flood protection while restoring components of the natural riverine system that were sacrificed in construction of the existing flood control system and facilitating urban revitalization. The project is located within the vicinity of the downtown area of Fort Worth, Texas, along the West Fork and Clear

Fork of the Trinity River and consists of a bypass channel, levee system, and associated improvements to divert flood flows around a segment of the existing floodway system.

Section 116 of Public Law 108-447, dated December 8, 2004, authorized USACE's participation in construction of the FWCC Project. Within that specific authorization, a subset which can be constructed by the USACE and the local sponsor, identified as the USACE's project, was defined at $110,000,000 federal cost and a $220,000,000 total project cost.

The FWCC Project is currently in the preliminary design phase. The project cost estimate and schedule that serve as key inputs to the CSRA process are provided as Appendices A and B, respectively. In consideration of the Authorization language, results presented on the allocation tables are shown in Federal 220 Project and non-Federal Project groupings.

3. Risk Analysis Process

The risk analysis process used for the FWCC Project is intended to determine the probability of various cost outcomes and quantify the required contingency needed in the cost estimate to achieve any desired level of confidence. A parallel process is also used to determined the probability of various project schedule duration outcomes and quantify the required schedule contingency (float) needed in the schedule to achieve any desired level of confidence.

In simple terms, contingency is an amount added to an estimate (cost or schedule) to allow for items, conditions or events for which the occurrence or impact is uncertain and that experience suggests will likely result in additional costs being incurred or additional time being required. The amount of contingency included in project control plans depends, at least in part, on the project leadership's willingness to accept risk. The less risk that project leadership is willing to accept that the project will overrun its budget or schedule, the more contingency that it should include in the control plans. The risk of overrun is expressed, in a probabilistic context, using confidence levels.

USACE guidance focuses on the eighty-percent level of confidence (P80) and, accordingly, the risk analysis for the FWCC Project generally highlights that particular level in reporting results. It should be noted that use of P80 as a decision criteria is a risk adverse approach (whereas the use of P50 would be a risk neutral approach, and use of levels less than fifty-percent would be risk-seeking).

The risk analysis process uses *Monte Carlo* techniques to determine probabilities and contingency. The *Monte Carlo* techniques are facilitated computationally by a commercially available risk analysis software package (Crystal Ball) that is an add-in to Microsoft Excel. The specific use of the Crystal Ball software is identified as a USACE requirement in the September 10, 2007 engineering and construction bulletin listed in Section 1. Because Crystal Ball is an Excel add-in, both the cost estimate and schedule were recreated in Excel format from their native MII (MCACES 2nd Generation) and Microsoft Project formats, respectively. The level of detail recreated in the Excel-format cost estimate and schedule is sufficient for CSRA purposes, but generally less than that of the native formats. It is important to note that no contingency was included in the cost estimate or schedule so that the estimate costs and

schedule durations represent the most likely outcomes without subjective adjustments for perceived risks.

The primary steps, in functional terms, of the risk analysis process are described in the following subsections. Risk analysis results are provided in Section 4.

3.1 Identify and Assess Risk Factors

Risk factors are events and conditions that may influence or drive uncertainty in project performance. They may be inherent characteristics or conditions of the project, or external influences, events, or conditions such as weather or economic conditions. Risk factors may have either favorable or unfavorable impacts on project cost and schedule.

Checklists or historical databases of common risk factors are sometimes used to facilitate risk factor identification. However, key risk factors are often unique to a project and not readily derivable from historical information. Therefore, input from the entire project team about its risk perceptions is generally obtained using creative processes such as brainstorming or other facilitated risk assessment meetings. In practice, a combination of professional judgment from the project team and empirical data from similar projects is desirable.

Two project team meetings were held for the formal purposes of identifying and assessing FWCC Project risk factors. The initial meeting (held February 7, 2008) and subsequent meeting (held February 20, 2008) included capable and qualified representatives from multiple project team disciplines and functions, including project management, technical management, finance, design engineering, cost engineering and estimating, scheduling and risk analysis. The initial meeting focused primarily on risk factor identification using brainstorming techniques, but also included some facilitated discussions based on risk factors common to projects of similar scope. The second meeting focused primarily on risk factor assessment and quantification. It was facilitated using a consensus-building approach.

A third formal meeting (held March 6, 2008), included project team members as well as USACE Walla Walla District independent reviewers and resulted in additional risk factor identification and assessment. Additionally, numerous conference calls and informal meetings were conducted on as as-needed basis to further facilitate risk factor identification and assessment.

3.2 Quantify Risk Factor Impacts

An effective CSRA process requires a clear understanding of each key risk factor and its potential impact to project cost and schedule. Moreover, risk factors should be carefully and thoughtfully defined in mathematical terms to avoid interactions and dependencies that may prove difficult for the project team to understand or estimate. For these cognitive reasons, as well as computational efficiency, risk factors used in probabilistic risk analysis should be modeled as independent random variables to the extent possible.

The quantitative impacts of FWCC Project risk factors on project plans were analyzed using a combination of professional judgment, empirical data and analytical techniques. Risk factor impacts were quantified using probability distributions (density functions), both as a tool to help project team members visualize the uncertainty of risk factor impacts, and because risk factors are entered into the Crystal Ball software in the form of probability density functions.

Similar to the identification and assessment process, risk factor quantification involved multiple project team disciplines and functions, including project management, technical management, finance, design engineering, cost engineering and estimating, scheduling and risk analysis. However, the quantification process relied more extensively on collaboration between technical management, cost engineering, scheduling and risk analysis team members with lesser inputs from other functions and disciplines.

The project team used an iterative, consensus-building approach to estimate the following elements of each risk factor:

- Maximum possible value for the risk factor
- Minimum possible value for the risk factor
- Most likely value (the statistical mode), if applicable
- Nature of the probability density function used to approximate risk factor uncertainty

For this CSRA, risk factors are defined in mathematical terms to literally function as factors (*i.e.*, a number multiplied by an estimated cost or schedule duration to form a product) in the *Monte Carlo* simulations used to quantify contingency. Accordingly, the risk factors are generally expressed in the form of a percentage with a statistical mode equal to 100%. This approach is favorable conceptually because it results in the most likely value of an estimated cost or schedule duration being preserved in probabilistic terms when it is multiplied by the risk factor (*e.g.*, a deterministic most likely cost in the MII estimate multiplied by a risk factor with a mode of 100% yields a probability distribution of costs with a mode equal to the most likely cost).

Perhaps more importantly, defining risk factors in percentage terms allows the impact of multiple risk factors on a single estimated cost or schedule duration to be quantified simply by multiplying each risk factor probability density function by the most likely value (*i.e.*, value from the MII cost estimate or Microsoft Project schedule) to form a product. For example, if four independent risk factors (R_1, R_2, R_3 and R_4) impact a single most likely estimated cost (C_{ML}), and the risk factor probability density functions are defined in percentage terms as described above, the probability distribution of the estimated cost can be quantified as a simple product (*i.e.*, equal to $C_{ML} \times R_1 \times R_2 \times R_3 \times R_4$).

Additionally, all most likely estimated costs or schedule durations which are multiplied by the same risk factor become intrinsically correlated. This characteristic is important because it greatly simplifies the establishment of correlations between cost estimate elements as compared to the alternative of defining correlation matrices to establish the desired correlations.

3.3 Analyze Contingency

Contingency was analyzed using the Crystal Ball software as an add-in to the Microsoft Excel format of the cost estimate and schedule. *Monte Carlo* simulations were performed by applying the risk factors (quantified as probability density functions) to the appropriate estimated cost and schedule elements identified by the project team.

For the cost estimate, the total project contingency was calculated as the difference between the P80 cost forecast and the most likely cost. The total project contingency was then allocated on a feature-specific level based on the dollar-weighed relative risk of each feature as quantified by *Monte Carlo* simulation. Standard deviation was used as the feature-specific measure of risk for contingency allocation purposes. This approach results in a relatively larger portion of total project contingency being allocated to features with relatively higher estimated cost uncertainty.

For schedule contingency analysis, the total project contingency was calculated as the difference between the P80 project duration forecast and the most likely project duration. Schedule contingency was analyzed only on the basis of the total project and not allocated to specific tasks.

Based on USACE guidance, only critical path and near critical path tasks were considered uncertain for the purposes of contingency analysis. Crystal Ball sensitivity analysis and schedule stress tests were used to identify probabilistic critical path and near critical path tasks, as well as the relative importance of each to the overall project duration.

To identify the probabilistic critical path and near critical path tasks, a series of three stress tests were performed. For the first stress test, the duration of every task was assumed to be uncertain based on a 3-point distribution (low, most likely, high) where the low value is -10 percent and the high value is +10 percent (relative to the most likely duration). The most likely value is the duration used in the Microsoft Project schedule. The resulting sensitivity analysis identified the deterministic critical path tasks, as well as the contribution to variance of each.

The second stress test doubled the assumed uncertainty with 3-point distributions based on +/- 20 percent. Because of the impact of schedule constraints and predecessor/successor relationships, tasks that are not part of the deterministic (Microsoft Project) critical path become important in sensitivity analysis terms (in some cases having a contribution to variance that exceeds a few deterministic critical path tasks). These tasks are near the critical path in a risk analysis context and important to consider for risk management purposes.

The third stress test doubled the assumed uncertainty again to 3-point distributions based on +/- 40 percent. Additional near critical path tasks were identified.

4. Risk Analysis Results

The results of the FWCC Project CSRA are provided in the following sections.

4.1 Risk Register

A risk register is a tool commonly used in project planning and risk analysis. The FWCC Project risk register (Table 1) reflects the results of risk factor identification and assessment, risk factor quantification, and contingency analysis.

It is important to note that the risk register can be an effective tool for managing identified risks throughout the project lifecycle. As such, it is recommended that the risk register be updated as the FWCC Project progresses through planning and implementation.

Recommended uses of the risk register going forward include:

- Documenting risk mitigation strategies being pursued in response to the identified risks and their assessment in terms of probability and impact.
- Providing project sponsors, stakeholders and leadership/management with a documented framework from which risk status can be reported in the context of project controls.
- Communicating risk management issues to stakeholders.
- Providing a mechanism for eliciting risk analysis feedback and project control input from stakeholders.
- Identifying risk transfer, elimination or mitigation actions required for implementation of risk management plans.

Table 2 provides a crosswalk of each risk factor and the work breakdown structure (WBS) elements impacted by the factor.

4.2 Cost Contingency

Overall project cost contingency was quantified as 17.6% of total estimated costs based on P80. Feature-specific cost contingencies range from under 5% (for construction management) to over 50% (for electric transmission line relocation). Table 3 provides the implied, overall project cost contingencies calculated for various levels of confidence. Figure 1 presents the Table 3 data in a graphical format.

Cost contingencies on a feature-specific basis are provided in Table 4. Table 5 summarizes the allocation of overall project contingency on a feature-specific level based on the dollar-weighed relative risk (standard deviation) of each feature as quantified by *Monte Carlo* simulation. A sensitivity analysis of the cost risk factors is provided as Table 6. In functional terms, the sensitivity analysis ranks the relative impact of each risk factor as a percentage of total cost uncertainty.

The probability density functions used to quantify cost risk factors are presented in Appendix C. The *Monte Carlo* simulation report generated by Crystal Ball for cost contingency analysis is provided as Appendix D.

TABLE 1 – RISK REGISTER					
Risk No.	**Risk Description**	**Likelihood**	**Impact**	**Risk Level**	**Notes**
1	Bidding Climate and Economic Factors				
1.1	Craft Labor Cost	Likely	Marginal	Moderate	Craft labor is subject to competition by several large, contemporaneous local projects. It is impacted by federal and state prevailing wage laws; therefore, labor costs can not drop below prevailing levels but can exceed prevailing wages under competitive market conditions. *Monte Carlo* simulation results indicate that this risk factor is associated with 5.6% of total project cost uncertainty.
1.2	General Materials Cost	Likely	Negligible	Low	The general materials risk factor is primarily intended to capture uncertainty of future costs for all materials except steel (*e.g.*, rebar) and concrete. General materials cost uncertainty is skewed towards higher costs (costs can not drop below zero, but can increase to the full extent the market will bear). *Monte Carlo* simulation results indicate that this risk factor is associated with less than 0.5% of total project cost uncertainty.
1.3	Equipment Cost (ex fuel)	Likely	Marginal	Moderate	Equipment costs are subject to competition by several large, contemporaneous local projects. Equipment cost (excluding fuel) uncertainty is skewed towards higher costs (costs can not drop below zero, but can increase to the full extent the market will bear). *Monte Carlo* simulation results indicate that this risk factor is associated with 5.2% of total project cost uncertainty.
1.4	Fuel Costs	Very Likely	Significant	High	There is significant, short-term uncertainty in future fuel costs. This risk factor is intended to capture the uncertainty of gasoline, off-road diesel and on-road diesel costs. The historical costs of each of these fuel product types are strongly

TABLE 1 – RISK REGISTER					
Risk No.	**Risk Description**	**Likelihood**	**Impact**	**Risk Level**	**Notes**
					correlated. Fuel cost uncertainty is skewed towards higher costs (costs can not drop below zero, but can increase to the full extent the market will bear). *Monte Carlo* simulation results indicate that this risk factor is associated with 8.5% of total project cost uncertainty.
1.5	Material Cost (High Historic Volatility)	Very Likely	Significant	High	The material cost (high historic volatility) risk factor is primarily intended to capture uncertainty of future costs for steel and concrete. The cost uncertainty for this risk factor is skewed towards higher costs (costs can not drop below zero, but can increase to the full extent the market will bear). *Monte Carlo* simulation results indicate that this risk factor is associated with 13.2% of total project cost uncertainty.
2	Land Acquisition Cost	Likely	Marginal	Moderate	Most land will be acquired within 3 years; 5 years for remainder. Prices may be at a near-term peak and are likely to be supported by the potential value of mineral rights. The cost uncertainty for this risk factor is skewed towards higher costs (costs can not drop below zero, but can increase to the full extent the market will bear). The quantity of land that will be actually acquired is probably less than the amount reflected in the cost estimate. *Monte Carlo* simulation results indicate that this risk factor is associated with 3.7% of total project cost uncertainty.
3	138 kV Transmission Line Relocation	Very Likely	Significant	High	Relocation of the 138 kV transmission line is highly dependent on TXU cooperation and assistance. This risk factor significantly impacts the schedule critical path. *Monte Carlo* simulation results indicate that this risk factor is associated with 2.1% of total project cost uncertainty.

TABLE 1 – RISK REGISTER					
Risk No.	**Risk Description**	**Likelihood**	**Impact**	**Risk Level**	**Notes**
4	Contract Packaging/Size	Likely	Marginal	Moderate	The number and size of contracts significantly impacts economies of scale, project management costs, etc. *Monte Carlo* simulation results indicate that this risk factor is associated with 6.4% of total project cost uncertainty. This risk factor may be partially mitigated through procurement planning.
5	Number of Contract Owners; Contract Capacity	Likely	Marginal	Moderate	The number of contract owners impacts economies of scale, project management costs, etc. Contract capacity may have schedule impacts on near critical path procurement tasks. *Monte Carlo* simulation results indicate that this risk factor is associated with 7.0% of total project cost uncertainty. This risk factor may be partially mitigated through procurement planning.
6	Design Guidance/Standard Changes				
6.1	Channels	Very Likely	Significant	High	Standards or guidance for channel design may be revised at any time. Hydrology and hydraulics, geotechnical, and structural design *buy-in* is still outstanding. Changes may affect other design elements. This risk factor impacts the schedule critical path. *Monte Carlo* simulation results indicate that this risk factor is associated with 9.3% of total project cost uncertainty.
6.2	Roadway Bridges	Likely	Marginal	Moderate	Standards or guidance for design may be revised at any time. May be impacted by changes in other design elements. This risk factor impacts the schedule critical path. *Monte Carlo* simulation results indicate that this risk factor is associated with 5.1% of total project cost uncertainty.
6.3	Samuels Avenue Dam	Likely	Negligible	Low	Standards or guidance for design may be revised at any time. May be impacted by changes in other design elements. *Monte Carlo* simulation results

TABLE 1 – RISK REGISTER					
Risk No.	**Risk Description**	**Likelihood**	**Impact**	**Risk Level**	**Notes**
					indicate that this risk factor is associated with 1.9% of total project cost uncertainty.
6.4	Marine Creek Low Water Dam/Locks	Likely	Negligible	Low	Standards or guidance for design may be revised at any time. May be impacted by changes in other design elements. *Monte Carlo* simulation results indicate that this risk factor is associated with less than 0.5% of total project cost uncertainty.
6.5	Flood Control and Diversion Structures	Likely	Significant	Moderate	Standards or guidance for design may be revised at any time. May be impacted by changes in other design elements. This risk factor impacts the schedule critical path. *Monte Carlo* simulation results indicate that this risk factor is associated with 3.3% of total project cost uncertainty.
6.6	Valley Storage	Likely	Negligible	Low	Standards or guidance for design may be revised at any time. May be impacted by changes in other design elements. *Monte Carlo* simulation results indicate that this risk factor is associated with 1.7% of total project cost uncertainty.
6.7	Pedestrian and Other Bridges	Unlikely	Negligible	Low	Changes in standards not anticipated. May be impacted by changes in other design elements. *Monte Carlo* simulation results indicate that this risk factor is associated with less than 0.5% of total project cost uncertainty.
6.8	Planning, Engineering and Design	Likely	Negligible	Low	May be impacted by changes in design standards/guidance. *Monte Carlo* simulation results indicate that this risk factor is associated with 1.5% of total project cost uncertainty.
6.9	Utilities	Likely	Negligible	Low	Standards or guidance for design may be revised at any time. May be impacted by changes in other design elements. *Monte Carlo* simulation results indicate that this risk factor is associated with 1.4% of total project cost uncertainty.

TABLE 1 – RISK REGISTER					
Risk No.	**Risk Description**	**Likelihood**	**Impact**	**Risk Level**	**Notes**
6.10	Stormwater Pumping Facility	Likely	Negligible	Low	Standards or guidance for design may be revised at any time. May be impacted by changes in other design elements. *Monte Carlo* simulation results indicate that this risk factor is associated with less than 0.5% of total project cost uncertainty.
6.11	Recreation Facilities	Likely	Negligible	Low	Standards or guidance for design may be revised at any time. May be impacted by changes in other design elements. *Monte Carlo* simulation results indicate that this risk factor is associated with less than 0.5% of total project cost uncertainty.
6.12	Fish and Wildlife Facilities	Likely	Negligible	Low	Standards or guidance for design may be revised at any time. May be impacted by changes in other design elements. *Monte Carlo* simulation results indicate that this risk factor is associated with less than 0.5% of total project cost uncertainty.
6.13	Feasibility Studies	Likely	Negligible	Low	May be impacted by changes in design standards/guidance. *Monte Carlo* simulation results indicate that this risk factor is associated with less than 0.5% of total project cost uncertainty.
6.14	Cultural Resource Preservation	Unlikely	Negligible	Low	Changes in guidance or standards not anticipated. *Monte Carlo* simulation results indicate that this risk factor is associated with less than 0.5% of total project cost uncertainty.
7	Wastewater Plant Site Availability	Likely	Negligible	Low	Site needed for disposal of material from Valley Storage construction. This risk factor may be partially mitigated through effective project planning. *Monte Carlo* simulation results indicate that this risk factor is associated with less than 0.5% of total project cost uncertainty.
8	HTRW	Likely	Marginal	Moderate	Phase I environmental site assessments are underway and results are generally favorable to date. However, only limited environmental characterization data is available. The nature of

TABLE 1 – RISK REGISTER					
Risk No.	**Risk Description**	**Likelihood**	**Impact**	**Risk Level**	**Notes**
					future cleanup needs is uncertain at this time. Partial mitigation of this risk factor is possible, but only at high costs (*e.g.,* using environmental insurance products). *Monte Carlo* simulation results indicate that this risk factor is associated with 7.0% of total project cost uncertainty.
9	Marine Creek Low Water Dam/Lock Project Definition	Likely	Marginal	Moderate	Number of bridges across Marine Creek not yet clearly defined. This risk factor impacts critical path and near critical path tasks. *Monte Carlo* simulation results indicate that this risk factor is associated with less than 0.5% of total project cost uncertainty.
10	Relocation	Likely	Marginal	Moderate	Several relocations involve permitting and other factors largely controlled by third parties. This risk factor impacts the schedule critical path. *Monte Carlo* simulation results indicate that this risk factor is associated with 2.6% of total project cost uncertainty.
11	Property Acquisition Assistance	Likely	Negligible	Low	Most land will be acquired within 3 years; 5 years for remainder. Quantity of land actually necessary probably less than estimated. *Monte Carlo* simulation results indicate that this risk factor is associated with less than 0.5% of total project cost uncertainty.
12	Utilities				
12.1	Utilities - City	Likely	Marginal	Moderate	City of Fort Worth plans expansion that includes upgrades. Utility work is highly dependent on City cooperation and assistance. Several relocations involve permitting and other factors largely controlled by third parties. *Monte Carlo* simulation results indicate that this risk factor is associated with 0.5% of total project cost

TABLE 1 – RISK REGISTER					
Risk No.	**Risk Description**	**Likelihood**	**Impact**	**Risk Level**	**Notes**
					uncertainty.
12.2	Utilities - Franchise	Likely	Marginal	Moderate	Potential right-of-way issues may impact schedule critical path and near critical path tasks. Utility work is highly dependent on the cooperation and assistance franchise owner/operators. *Monte Carlo* simulation results indicate that this risk factor is associated with less than 0.5% of total project cost uncertainty.
13	Electrical Design	Likely	Negligible	Low	No electrical designs have been prepared. However, large changes in estimated electrical design costs do not have a significant impact on overall project costs. *Monte Carlo* simulation results indicate that this risk factor is associated with less than 0.5% of total project cost uncertainty.
14	Technical Complexity				
14.1	Flood Control and Diversion Structures	Likely	Marginal	Moderate	Technically complex project features are more likely to experience schedule delays and cost overruns (change orders) than relatively simple features. This risk factor is intended to capture the uncertainty in estimated costs and schedule associated with technical uncertainty. It may significantly impact critical path and near critical path tasks. *Monte Carlo* simulation results indicate that this risk factor is associated with 3.3% of total project cost uncertainty.
14.2	Roadway Bridges	Likely	Marginal	Moderate	Technically complex project features are more likely to experience schedule delays and cost overruns (change orders) than relatively simple features. This risk factor is intended to capture the uncertainty in estimated costs and schedule associated with technical uncertainty. It may

TABLE 1 – RISK REGISTER					
Risk No.	**Risk Description**	**Likelihood**	**Impact**	**Risk Level**	**Notes**
					significantly impact critical path and near critical path tasks. *Monte Carlo* simulation results indicate that this risk factor is associated with 5.2% of total project cost uncertainty.
14.3	Dams	Likely	Marginal	Moderate	Technically complex project features are more likely to experience schedule delays and cost overruns (change orders) than relatively simple features. This risk factor is intended to capture the uncertainty in estimated costs and schedule associated with technical uncertainty. It may significantly impact critical path and near critical path tasks. *Monte Carlo* simulation results indicate that this risk factor is associated with 1.3% of total project cost uncertainty.
14.4	Levees and Floodwalls	Likely	Marginal	Moderate	Technically complex project features are more likely to experience schedule delays and cost overruns (change orders) than relatively simple features. This risk factor is intended to capture the uncertainty in estimated costs and schedule associated with technical uncertainty. It may significantly impact critical path and near critical path tasks. *Monte Carlo* simulation results indicate that this risk factor is associated with 0.5% of total project cost uncertainty.
14.5	Valley Storage	Likely	Negligible	Low	Technically complex project features are more likely to experience schedule delays and cost overruns (change orders) than relatively simple features. This risk factor is intended to capture the uncertainty in estimated costs and schedule associated with technical uncertainty. *Monte Carlo* simulation results indicate that this risk factor is associated with less than 0.5% of total project cost uncertainty.

TABLE 1 – RISK REGISTER					
Risk No.	**Risk Description**	**Likelihood**	**Impact**	**Risk Level**	**Notes**
15	Contract Acquisition Strategy - Federal	Likely	Marginal	Moderate	The types of contracts available and special requirements (*e.g.*, small business set asides) may significantly affect project costs for the federal project. *Monte Carlo* simulation results indicate that this risk factor is associated with 1.6% of total project cost uncertainty. Only minor levels of mitigation are anticipated.
16	Equipment Productivity	Likely	Marginal	Moderate	The estimated productivity of equipment and equipment operators is based on historical data and may not be reflective of conditions actually experienced. This risk factor is primarily intended to capture equipment productivity uncertainty for high cost areas, such as earthen haul/placement and concrete wall construction. This risk factor impacts critical path and near critical path tasks. *Monte Carlo* simulation results indicate that this risk factor is associated with less than 0.5% of total project cost uncertainty.

TABLE 2 – WBS/RISK FACTOR CROSSWALK					
Risk No.	**Risk Description**	**WBS Labor Costs Impacted**	**WBS Equip Cost Impacted**	**WBS Materials Costs Impacted**	**WBS Sub Bid Costs Impacted**
1	Bidding Climate and Economic Factors				
1.1	Craft Labor Cost	All Construction Features[1]	-	-	-
1.2	General Materials Cost	-	-	1.2 03 Reservoirs[2]; 1.3 06 Fish and Wildlife Facilities[2]; 1.4 11 Levees and Floodwalls (except for 1.4.1.5 Retaining Walls and 1.4.2.5 Retaining Walls)[2]; 2.2 02 Relocations[2]; 2.4 06 Fish and Wildlife Facilities[2]; 2.5.5 25 Other Street Modifications; 2.5.6 30 Riverside Oxbow Park; 2.5.7 35 Riverside Gateway Park; 2.5.8 40 Bypass Channel Pedestrian Bridges; 2.6 13 Pumping Plants; 2.7 14 Recreation Facilities[2]	-
1.3	Equipment Cost (ex fuel)	-	All Construction Features[1]	-	-
1.4	Fuel Cost	-	All Construction Features[1]	-	-

TABLE 2 – WBS/RISK FACTOR CROSSWALK					
Risk No.	**Risk Description**	**WBS Labor Costs Impacted**	**WBS Equip Cost Impacted**	**WBS Materials Costs Impacted**	**WBS Sub Bid Costs Impacted**
1.5	Material Cost (High Historic Volatility)	-	-	1.4.1.5 Retaining Walls; 1.4.2.5 Retaining Walls; 1.5.1 05 Clear Fork; 1.5.2 15 TRWD; 2.3.1 05 Samuels Avenue Dam; 2.3.2 10 Marine Creek Low Water Dam/Lock; 2.5.1 05 Henderson Bridge and Roadway; 2.5.2 10 White Settlement Bridge and Roadway; 2.5.3 15 Main Street Bridge and Roadway; 2.5.4 20 White Settlement Extension Bridge and Roadway; 2.8.1 10 Trinity Point	-
2	Land Acquisition Cost	-	-	-	1.1.1 10 Property Acquisition 2.1.2 10 Property Acquisition
3	138 kV Transmission Line Relocation	2.2.4 20 Utility Relocation - Transmission Lines	2.2.4 20 Utility Relocation - Transmission Lines	2.2.4 20 Utility Relocation - Transmission Lines	2.2.4 20 Utility Relocation - Transmission Lines
4	Contract Packaging/Size	All Construction Features[1] 1.8 31 Construction Management 2.10 31 Construction Management	All Construction Features[1] 1.8 31 Construction Management 2.10 31 Construction Management	All Construction Features[1] 1.8 31 Construction Management 2.10 31 Construction Management	All Construction Features[1] 1.8 31 Construction Management 2.10 31 Construction Management

TABLE 2 – WBS/RISK FACTOR CROSSWALK					
Risk No.	**Risk Description**	**WBS Labor Costs Impacted**	**WBS Equip Cost Impacted**	**WBS Materials Costs Impacted**	**WBS Sub Bid Costs Impacted**
5	Number of Contract Owners; Contract Capacity	All Construction Features[1] 1.8 31 Construction Management 2.10 31 Construction Management	All Construction Features[1] 1.8 31 Construction Management 2.10 31 Construction Management	All Construction Features[1] 1.8 31 Construction Management 2.10 31 Construction Management	All Construction Features[1] 1.8 31 Construction Management 2.10 31 Construction Management
6	Design Guidance/Standard Changes				
6.1	Channels	1.4 11 Levees and Floodwalls[2]	1.4 11 Levees and Floodwalls[2]	1.4 11 Levees and Floodwalls[2]	1.4 11 Levees and Floodwalls[2]
6.2	Roadway Bridges	2.5.1 05 Henderson Bridge and Roadway; 2.5.2 10 White Settlement Bridge and Roadway; 2.5.3 15 Main Street Bridge and Roadway; 2.5.4 20 White Settlement Extension Bridge and Roadway	2.5.1 05 Henderson Bridge and Roadway; 2.5.2 10 White Settlement Bridge and Roadway; 2.5.3 15 Main Street Bridge and Roadway; 2.5.4 20 White Settlement Extension Bridge and Roadway	2.5.1 05 Henderson Bridge and Roadway; 2.5.2 10 White Settlement Bridge and Roadway; 2.5.3 15 Main Street Bridge and Roadway; 2.5.4 20 White Settlement Extension Bridge and Roadway	2.5.1 05 Henderson Bridge and Roadway; 2.5.2 10 White Settlement Bridge and Roadway; 2.5.3 15 Main Street Bridge and Roadway; 2.5.4 20 White Settlement Extension Bridge and Roadway
6.3	Samuels Avenue Dam	2.3.1 05 Samuels Avenue Dam	2.3.1 05 Samuels Avenue Dam	2.3.1 05 Samuels Avenue Dam	2.3.1 05 Samuels Avenue Dam
6.4	Marine Creek Low Water Dam/Locks	2.3.2 10 Marine Creek Low Water Dam/Lock	2.3.2 10 Marine Creek Low Water Dam/Lock	2.3.2 10 Marine Creek Low Water Dam/Lock	2.3.2 10 Marine Creek Low Water Dam/Lock
6.5	Flood Control and Diversion Structures	1.5.1 05 Clear Fork; 1.5.2 15 TRWD; 2.8.1 10 Trinity Point	1.5.1 05 Clear Fork; 1.5.2 15 TRWD; 2.8.1 10 Trinity Point	1.5.1 05 Clear Fork; 1.5.2 15 TRWD; 2.8.1 10 Trinity Point	1.5.1 05 Clear Fork; 1.5.2 15 TRWD; 2.8.1 10 Trinity Point
6.6	Valley Storage	1.2 03 Reservoirs[2]	1.2 03 Reservoirs[2]	1.2 03 Reservoirs[2]	1.2 03 Reservoirs[2]

TABLE 2 – WBS/RISK FACTOR CROSSWALK					
Risk No.	**Risk Description**	**WBS Labor Costs Impacted**	**WBS Equip Cost Impacted**	**WBS Materials Costs Impacted**	**WBS Sub Bid Costs Impacted**
6.7	Pedestrian and Other Bridges	2.5.5 25 Other Street Modifications; 2.5.6 30 Riverside Oxbow Park; 2.5.7 35 Riverside Gateway Park; 2.5.8 40 Bypass Channel Pedestrian Bridges	2.5.5 25 Other Street Modifications; 2.5.6 30 Riverside Oxbow Park; 2.5.7 35 Riverside Gateway Park; 2.5.8 40 Bypass Channel Pedestrian Bridges	2.5.5 25 Other Street Modifications; 2.5.6 30 Riverside Oxbow Park; 2.5.7 35 Riverside Gateway Park; 2.5.8 40 Bypass Channel Pedestrian Bridges	2.5.5 25 Other Street Modifications; 2.5.6 30 Riverside Oxbow Park; 2.5.7 35 Riverside Gateway Park; 2.5.8 40 Bypass Channel Pedestrian Bridges
6.8	Planning, Engineering and Design	1.7.1 A/E Design Services; 1.7.2 Permitting; 2.9.1 A/E Design Services; 2.9.2 Permitting	1.7.1 A/E Design Services; 1.7.2 Permitting; 2.9.1 A/E Design Services; 2.9.2 Permitting	1.7.1 A/E Design Services; 1.7.2 Permitting; 2.9.1 A/E Design Services; 2.9.2 Permitting	1.7.1 A/E Design Services; 1.7.2 Permitting; 2.9.1 A/E Design Services; 2.9.2 Permitting
6.9	Utilities	2.2.3 15 Utility Relocation - Sanitary Sewer, Potable Water, Storm Sewer and Natural Gas; 2.2.4 20 Utility Relocation - Electrical and Communication; 2.2.5 25 Utility Relocation - Transmission Lines	2.2.3 15 Utility Relocation - Sanitary Sewer, Potable Water, Storm Sewer and Natural Gas; 2.2.4 20 Utility Relocation - Electrical and Communication; 2.2.5 25 Utility Relocation - Transmission Lines	2.2.3 15 Utility Relocation - Sanitary Sewer, Potable Water, Storm Sewer and Natural Gas; 2.2.4 20 Utility Relocation - Electrical and Communication; 2.2.5 25 Utility Relocation - Transmission Lines	2.2.3 15 Utility Relocation - Sanitary Sewer, Potable Water, Storm Sewer and Natural Gas; 2.2.4 20 Utility Relocation - Electrical and Communication; 2.2.5 25 Utility Relocation - Transmission Lines
6.10	Stormwater Pumping Facility	2.6.1 05 Stormwater Pumping Facility	2.6.1 05 Stormwater Pumping Facility	2.6.1 05 Stormwater Pumping Facility	2.6.1 05 Stormwater Pumping Facility
6.11	Recreation Facilities	2.7 14 Recreation Facilities[2]	2.7 14 Recreation Facilities[2]	2.7 14 Recreation Facilities[2]	2.7 14 Recreation Facilities[2]

TABLE 2 – WBS/RISK FACTOR CROSSWALK					
Risk No.	**Risk Description**	**WBS Labor Costs Impacted**	**WBS Equip Cost Impacted**	**WBS Materials Costs Impacted**	**WBS Sub Bid Costs Impacted**
6.12	Fish and Wildlife Facilities	1.3.1 15 Ham Branch 2.4 06 Fish and Wildlife Facilities[2]	1.3.1 15 Ham Branch 2.4 06 Fish and Wildlife Facilities[2]	1.3.1 15 Ham Branch 2.4 06 Fish and Wildlife Facilities[2]	1.3.1 15 Ham Branch 2.4 06 Fish and Wildlife Facilities[2]
6.13	Feasibility Studies	1.7.3 Survey and Testing; 1.7.4 Legal costs; 2.9.3 Survey and Testing; 2.9.4 Legal costs	1.7.3 Survey and Testing; 1.7.4 Legal costs; 2.9.3 Survey and Testing; 2.9.4 Legal costs	1.7.3 Survey and Testing; 1.7.4 Legal costs; 2.9.3 Survey and Testing; 2.9.4 Legal costs	1.7.3 Survey and Testing; 1.7.4 Legal costs; 2.9.3 Survey and Testing; 2.9.4 Legal costs
6.14	Cultural Resource Preservation	1.6 18 Cultural Resource Preservation	1.6 18 Cultural Resource Preservation	1.6 18 Cultural Resource Preservation	1.6 18 Cultural Resource Preservation
7	Wastewater Plant Site Availability (Excavated Material Disposal Costs)	1.2.1.6 30 Riverside Oxbow/Gateway (impacts $1,474,951.63 of total labor cost)	1.2.1.6 30 Riverside Oxbow/Gateway (impacts $3,953,227.34 of total equipment cost)	-	-
8	HTRW	2.11 33 HTRW[2]	2.11 33 HTRW[2]	2.11 33 HTRW[2]	2.11 33 HTRW[2]
9	Marine Creek Low Water Dam/Lock Project Definition	2.3.2 10 Marine Creek Low Water Dam/Lock	2.3.2 10 Marine Creek Low Water Dam/Lock	2.3.2 10 Marine Creek Low Water Dam/Lock	2.3.2 10 Marine Creek Low Water Dam/Lock
10	Relocation	1.1.2 15 Relocations; 2.1.3 15 Relocations	1.1.2 15 Relocations; 2.1.3 15 Relocations	1.1.2 15 Relocations; 2.1.3 15 Relocations	1.1.2 15 Relocations; 2.1.3 15 Relocations
11	Property Acquisition Assistance	2.1.1 05 Property Acquisition Assistance	2.1.1 05 Property Acquisition Assistance	2.1.1 05 Property Acquisition Assistance	2.1.1 05 Property Acquisition Assistance
12	Utilities				

TABLE 2 – WBS/RISK FACTOR CROSSWALK					
Risk No.	**Risk Description**	**WBS Labor Costs Impacted**	**WBS Equip Cost Impacted**	**WBS Materials Costs Impacted**	**WBS Sub Bid Costs Impacted**
12.1	Utilities - City	2.2.2 10 Utility Relocation	2.2.2 10 Utility Relocation	2.2.2 10 Utility Relocation	2.2.2 10 Utility Relocation
12.2	Utilities - Franchise	2.2.3 15 Utility Relocation	2.2.3 15 Utility Relocation	2.2.3 15 Utility Relocation	2.2.3 15 Utility Relocation
13	Electrical Design	-	-	-	1.5.1 05 Clear Fork (impacts $355,000 of total sub bid cost); 1.5.2 15 TRWD (impacts $195,000 of total sub bid cost); 2.8.1 10 Trinity Point (impacts $355,000 of total sub bid cost); 2.7.1 05 Water Feature (impacts $500,000 of total sub bid cost); 2.7.3 15 Marine Creek (impacts $100,000 of total sub bid cost); 2.7.7 35 Riverside Oxbow/Gateway Park (impacts $188,300 of total sub bid cost)
14	Technical Complexity				
14.1	Flood Control and Diversion Structures	1.5.1 05 Clear Fork; 1.5.2 15 TRWD; 2.8.1 10 Trinity Point	1.5.1 05 Clear Fork; 1.5.2 15 TRWD; 2.8.1 10 Trinity Point	1.5.1 05 Clear Fork; 1.5.2 15 TRWD; 2.8.1 10 Trinity Point	1.5.1 05 Clear Fork; 1.5.2 15 TRWD; 2.8.1 10 Trinity Point

TABLE 2 – WBS/RISK FACTOR CROSSWALK					
Risk No.	**Risk Description**	**WBS Labor Costs Impacted**	**WBS Equip Cost Impacted**	**WBS Materials Costs Impacted**	**WBS Sub Bid Costs Impacted**
14.2	Roadway Bridges	2.5.1 05 Henderson Bridge and Roadway; 2.5.2 10 White Settlement Bridge and Roadway; 2.5.3 15 Main Street Bridge and Roadway; 2.5.4 20 White Settlement Extension Bridge and Roadway	2.5.1 05 Henderson Bridge and Roadway; 2.5.2 10 White Settlement Bridge and Roadway; 2.5.3 15 Main Street Bridge and Roadway; 2.5.4 20 White Settlement Extension Bridge and Roadway	2.5.1 05 Henderson Bridge and Roadway; 2.5.2 10 White Settlement Bridge and Roadway; 2.5.3 15 Main Street Bridge and Roadway; 2.5.4 20 White Settlement Extension Bridge and Roadway	2.5.1 05 Henderson Bridge and Roadway; 2.5.2 10 White Settlement Bridge and Roadway; 2.5.3 15 Main Street Bridge and Roadway; 2.5.4 20 White Settlement Extension Bridge and Roadway
14.3	Dams	2.3.1 05 Samuels Avenue Dam 2.3.2 10 Marine Creek Low Water Dam/Lock	2.3.1 05 Samuels Avenue Dam 2.3.2 10 Marine Creek Low Water Dam/Lock	2.3.1 05 Samuels Avenue Dam 2.3.2 10 Marine Creek Low Water Dam/Lock	2.3.1 05 Samuels Avenue Dam 2.3.2 10 Marine Creek Low Water Dam/Lock
14.4	Levees and Floodwalls	1.4 11 Levees and Floodwalls[2]	1.4 11 Levees and Floodwalls[2]	1.4 11 Levees and Floodwalls[2]	1.4 11 Levees and Floodwalls[2]
14.5	Valley Storage	1.2 03 Reservoirs[2]	1.2 03 Reservoirs[2]	1.2 03 Reservoirs[2]	1.2 03 Reservoirs[2]

TABLE 2 – WBS/RISK FACTOR CROSSWALK					
Risk No.	**Risk Description**	**WBS Labor Costs Impacted**	**WBS Equip Cost Impacted**	**WBS Materials Costs Impacted**	**WBS Sub Bid Costs Impacted**
15	Contract Acquisition Strategy - Federal	1.2 03 Reservoirs[2]; 1.3 06 Fish and Wildlife Facilities[2]; 1.4 11 Levees and Floodwalls[2]; 1.5 15 Flood Control and Diversion Structures[2]; 1.6 18 Cultural Resource Preservation[2]; 1.7 30 Planning, Engineering, and Design[2]; 1.8 31 Construction Management[2]	1.2 03 Reservoirs[2]; 1.3 06 Fish and Wildlife Facilities[2]; 1.4 11 Levees and Floodwalls[2]; 1.5 15 Flood Control and Diversion Structures[2]; 1.6 18 Cultural Resource Preservation[2]; 1.7 30 Planning, Engineering, and Design[2]; 1.8 31 Construction Management[2]	1.2 03 Reservoirs[2]; 1.3 06 Fish and Wildlife Facilities[2]; 1.4 11 Levees and Floodwalls[2]; 1.5 15 Flood Control and Diversion Structures[2]; 1.6 18 Cultural Resource Preservation[2]; 1.7 30 Planning, Engineering, and Design[2]; 1.8 31 Construction Management[2]	1.2 03 Reservoirs[2]; 1.3 06 Fish and Wildlife Facilities[2]; 1.4 11 Levees and Floodwalls[2]; 1.5 15 Flood Control and Diversion Structures[2]; 1.6 18 Cultural Resource Preservation[2]; 1.7 30 Planning, Engineering, and Design[2]; 1.8 31 Construction Management[2]
16	Equipment Productivity	1.2.1.1 05 Samuels Avenue Sites (impacts $228,138.98 of total labor cost); 1.2.1.4 20 Riverside Park (impacts $265,789.54 of total labor cost); 1.2.1.5 25 Rockwood Park – West (impacts $192,255.35 of total labor cost); 1.2.1.6 30 Riverside Oxbow/Gateway (impacts $3,057,711.33 of total labor cost); 1.4.1.3 Excavation, Hauling, and	1.2.1.1 05 Samuels Avenue Sites (impacts $1,351,042.49 of total equip cost); 1.2.1.4 20 Riverside Park (impacts $453,951.35 of total equip cost); 1.2.1.5 25 Rockwood Park – West (impacts $313,397.22 of total equip cost); 1.2.1.6 30 Riverside Oxbow/Gateway (impacts $5,560,247.47 of total equip cost); 1.4.1.3 Excavation, Hauling, and Placement; 1.4.2.3	-	-

TABLE 2 – WBS/RISK FACTOR CROSSWALK					
Risk No.	**Risk Description**	**WBS Labor Costs Impacted**	**WBS Equip Cost Impacted**	**WBS Materials Costs Impacted**	**WBS Sub Bid Costs Impacted**
		Placement; 1.4.2.3 Excavation, Hauling, and Placement	Excavation, Hauling, and Placement		

Notes

1 Construction features include the following WBS features and all associated subfeatures under the following headings:

1.2 03 Reservoirs
1.3 06 Fish and Wildlife Facilities
1.4 11 Levees and Floodwalls
1.5 15 Flood Control and Diversion Structures
2.2 02 Relocations
2.3 04 Dams
2.4 06 Fish and Wildlife Facilities
2.5 08 Roads, Railroads and Bridges
2.6 13 Pumping Plants
2.7 14 Recreation Facilities
2.8 15 Flood Control and Diversion Structures

2 Impacts all features and associated subfeatures under the WBS heading indicated (unless exceptions are noted).

TABLE 3 – TOTAL PROJECT COST CONTINGENCY		
MII Cost Estimate without Contingency (2007 baseline)		**$506,743,627**
Confidence Level	**Value**	**Percent Contingency**
0%	$467,794,905	-7.7%
10%	$538,169,117	6.2%
20%	$549,395,027	8.4%
30%	$557,717,760	10.1%
40%	$564,976,142	11.5%
50%	$571,831,681	12.8%
60%	$578,897,983	14.2%
70%	$586,827,731	15.8%
80%	$596,111,405	17.6%
90%	$609,352,259	20.2%
100%	$716,281,926	41.3%

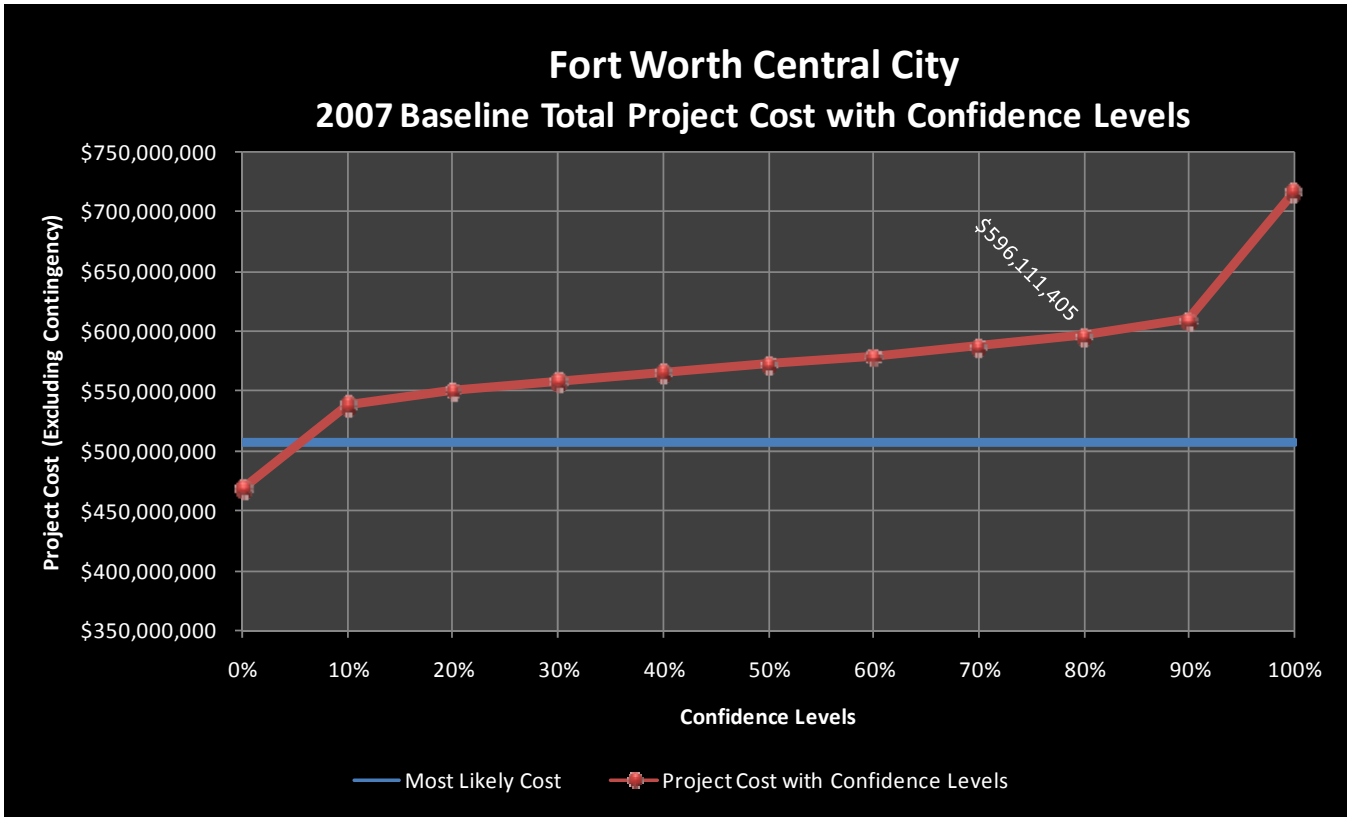


FIGURE 1 – TOTAL PROJECT COST WITH CONFIDENCE LEVELS

TABLE 4 – COST CONTINGENCY BY FEATURE			
Description	Project Cost 2007 $	Contingency	
		%	$
Total Project Cost	506,743,627		
1 01 Federal 220 Project	159,108,916		
1.1 01 Lands and Damages	31,183,334		
1.1.1 10 Property Acquisition	26,568,716	12%	3,176,504
1.1.2 15 Property Relocations	4,614,618	24%	1,085,656
1.2 03 Reservoirs	43,268,796		
1.2.1.1 05 Samuels Avenue Sites	5,323,585	19%	1,008,375
1.2.1.2 10 University Drive	3,952,653	12%	468,697
1.2.1.3 15 Ham Branch	822,375	12%	96,205
1.2.1.4 20 Riverside Park	2,375,242	18%	437,363
1.2.1.5 25 Rockwood Park - West	1,579,999	19%	308,083
1.2.1.6 30 Riverside Oxbow/Gateway	29,214,941	20%	5,799,745
1.3 06 Fish and Wildlife Facilities	304,109		
1.3.1 15 Ham Branch	304,109	10%	30,436
1.4 11 Levees and Floodwalls	41,125,153		
1.4.1 Bypass Channel - North	18,580,541	28%	5,191,780
1.4.2 Bypass Channel - South	22,544,611	28%	6,347,971
1.5 15 Flood Control and Diversion Structures	24,695,906		
1.5.1 05 Clear Fork	11,774,910	24%	2,768,234
1.5.2 15 TRWD	12,920,996	24%	3,074,963
1.6 18 Cultural Resource Preservation	1,108,740	12%	132,648
1.7 30 Planning, Engineering, and Design	11,345,131	11%	1,205,257
1.8 31 Construction Management	6,077,749	4%	261,167
2 02 Non-Federal Project	347,634,710		
2.1 01 Lands and Damages	53,111,628		
2.1.1 05 Property Acquisition Assistance	7,239,991	10%	687,890
2.1.2 10 Property Acquisition	28,406,743	12%	3,396,255
2.1.3 15 Property Relocations	17,464,894	24%	4,108,869
2.2 02 Relocations	32,887,990		
2.2.1 05 Mobilization and Demobilization	10,230	15%	1,576
2.2.2 10 General Demolition and Site Preparation	10,293,929	16%	1,608,755
2.2.3 15 Utility Relocation - Sanitary Sewer, Potable Water, Storm Sewer and Natural Gas	10,444,027	27%	2,792,557
2.2.4 20 Utility Relocation - Electrical and Communication	2,873,548	27%	766,493
2.2.5 25 Utility Relocation - Transmission Lines	9,266,254	53%	4,949,016
2.3 04 Dams	42,239,100		
2.3.1 05 Samuels Avenue Dam	30,949,414	18%	5,665,737
2.3.2 10 Marine Creek Low Water Dam/Lock	11,289,686	27%	3,065,588

TABLE 4 – COST CONTINGENCY BY FEATURE			
Description	Project Cost 2007 $	Contingency	
		%	$
2.4 06 Fish and Wildlife Facilities	10,835,246		
2.4.1 10 Riverside Oxbow/Gateway	10,166,517	9%	944,962
2.4.2 05 Rockwood Park	668,729	15%	100,732
2.5 08 Roads, Railroads and Bridges	70,579,566		
2.5.1 05 Henderson Bridge and Roadway	19,398,453	18%	3,585,619
2.5.2 10 White Settlement Bridge and Roadway	14,813,840	18%	2,693,425
2.5.3 15 Main Street Bridge and Roadway	19,594,591	18%	3,516,537
2.5.4 20 White Settlement Extension Bridge and Roadway	4,705,205	19%	899,765
2.5.5 25 Other Street Modifications	2,841,232	9%	267,510
2.5.6 30 Riverside Oxbow Park	5,934,883	11%	659,990
2.5.7 35 Riverside Gateway Park	1,196,511	11%	130,596
2.5.8 40 Bypass Channel Pedestrian Bridges	2,094,852	9%	195,454
2.6 13 Pumping Plants	5,622,722		
2.6.1 05 Stormwater Pumping Facility	5,622,722	14%	766,547
2.7 14 Recreation Facilities	22,269,848		
2.7.1 05 Water Feature	12,264,109	9%	1,161,066
2.7.2 10 Samuels Avenue	308,904	8%	24,866
2.7.3 15 Marine Creek	3,180,897	8%	256,051
2.7.4 20 Ham Branch	39,958	9%	3,502
2.7.5 25 Riverside Park	594,394	6%	37,191
2.7.6 30 Rockwood Park - West	156,711	8%	12,735
2.7.7 35 Riverside Oxbow/Gateway Park	5,724,877	6%	365,617
2.8 15 Flood Control and Diversion Structures	12,116,580		
2.8.1 10 Trinity Point	12,116,580	22%	2,682,091
2.9 30 Planning, Engineering, and Design	32,717,096	9%	3,037,301
2.10 31 Construction Management	40,432,378	3%	1,245,016
2.11 33 HTRW	24,822,555		
2.11.1 Environmental Assessments	2,628,880	34%	883,834
2.11.2 Site Remediation	19,832,531	34%	6,667,731
2.11.3 Remediation Program Management	2,361,144	34%	793,821

TABLE 5 – CONTINGENCY ALLOCATION TABLE					
Description	**Project Cost 2007 $**	**Forecast Standard Deviation $**	**Forecast Standard Deviation %**	**Contingency Allocation (% of total)**	**Contingency Allocation $**
Total Project Cost	506,743,627				
1 01 Federal 220 Project	159,108,916				
1.1 01 Lands and Damages	31,183,334				
1.1.1 10 Property Acquisition	26,568,716	$2,727,400.56	10%	4%	$3,176,504.43
1.1.2 15 Property Relocations	4,614,618	$932,162.33	20%	1%	$1,085,655.63
1.2 03 Reservoirs	43,268,796				
1.2.1.1 05 Samuels Avenue Sites	5,323,585	$865,807.91	16%	1%	$1,008,375.04
1.2.1.2 10 University Drive	3,952,653	$402,430.98	10%	1%	$ 468,696.75
1.2.1.3 15 Ham Branch	822,375	$82,603.17	10%	0%	$ 96,204.91
1.2.1.4 20 Riverside Park	2,375,242	$375,527.30	16%	0%	$ 437,363.01
1.2.1.5 25 Rockwood Park - West	1,579,999	$264,525.67	17%	0%	$ 308,083.45
1.2.1.6 30 Riverside Oxbow/Gateway	29,214,941	$4,979,759.22	17%	6%	$5,799,744.80
1.3 06 Fish and Wildlife Facilities	304,109				
1.3.1 15 Ham Branch	304,109	$26,132.62	9%	0%	$ 30,435.71
1.4 11 Levees and Floodwalls	41,125,153				
1.4.1 Bypass Channel - North	18,580,541	$4,457,750.04	24%	6%	$5,191,779.65
1.4.2 Bypass Channel - South	22,544,611	$5,450,475.11	24%	7%	$6,347,970.51
1.5 15 Flood Control and Diversion Structures	24,695,906				
1.5.1 05 Clear Fork	11,774,910	$2,376,853.03	20%	3%	$2,768,234.44
1.5.2 15 TRWD	12,920,996	$2,640,215.13	20%	3%	$3,074,962.72
1.6 18 Cultural Resource Preservation	1,108,740	$113,894.18	10%	0%	$ 132,648.42
1.7 30 Planning, Engineering, and Design	11,345,131	$1,034,853.67	9%	1%	$1,205,256.50
1.8 31 Construction Management	6,077,749	$224,241.99	4%	0%	$ 261,166.51
2 02 Non-Federal Project	347,634,710				
2.1 01 Lands and Damages	53,111,628				
2.1.1 05 Property Acquisition Assistance	7,239,991	$590,634.35	8%	1%	$ 687,890.39
2.1.2 10 Property Acquisition	28,406,743	$2,916,082.46	10%	4%	$3,396,255.39
2.1.3 15 Property Relocations	17,464,894	$3,527,944.51	20%	5%	$4,108,868.90
2.2 02 Relocations	32,887,990				
2.2.1 05 Mobilization and Demobilization	10,230	$1,353.48	13%	0%	$ 1,576.35
2.2.2 10 General Demolition and Site Preparation	10,293,929	$1,381,304.38	13%	2%	$1,608,755.07
2.2.3 15 Utility Relocation - Sanitary Sewer, Potable Water, Storm Sewer and Natural Gas	10,444,027	$2,397,737.17	23%	3%	$2,792,557.44
2.2.4 20 Utility Relocation - Electrical and Communication	2,873,548	$658,124.22	23%	1%	$ 766,493.39

TABLE 5 – CONTINGENCY ALLOCATION TABLE					
Description	**Project Cost 2007 $**	**Forecast Standard Deviation $**	**Forecast Standard Deviation %**	**Contingency Allocation (% of total)**	**Contingency Allocation $**
2.2.5 25 Utility Relocation - Transmission Lines	9,266,254	$4,249,308.71	46%	6%	$4,949,015.60
2.3 04 Dams	42,239,100				
2.3.1 05 Samuels Avenue Dam	30,949,414	$4,864,697.58	16%	6%	$5,665,736.68
2.3.2 10 Marine Creek Low Water Dam/Lock	11,289,686	$2,632,165.42	23%	3%	$3,065,587.52
2.4 06 Fish and Wildlife Facilities	10,835,246				
2.4.1 10 Riverside Oxbow/Gateway	10,166,517	$811,360.24	8%	1%	$ 944,961.82
2.4.2 05 Rockwood Park	668,729	$86,490.23	13%	0%	$ 100,732.03
2.5 08 Roads, Railroads and Bridges	70,579,566				
2.5.1 05 Henderson Bridge and Roadway	19,398,453	$3,078,673.13	16%	4%	$3,585,618.84
2.5.2 10 White Settlement Bridge and Roadway	14,813,840	$2,312,620.40	16%	3%	$2,693,425.03
2.5.3 15 Main Street Bridge and Roadway	19,594,591	$3,019,358.37	15%	4%	$3,516,537.09
2.5.4 20 White Settlement Extension Bridge and Roadway	4,705,205	$772,553.16	16%	1%	$ 899,764.62
2.5.5 25 Other Street Modifications	2,841,232	$229,689.05	8%	0%	$ 267,510.50
2.5.6 30 Riverside Oxbow Park	5,934,883	$566,678.47	10%	1%	$ 659,989.84
2.5.7 35 Riverside Gateway Park	1,196,511	$112,131.82	9%	0%	$ 130,595.86
2.5.8 40 Bypass Channel Pedestrian Bridges	2,094,852	$167,820.25	8%	0%	$ 195,454.15
2.6 13 Pumping Plants	5,622,722				
2.6.1 05 Stormwater Pumping Facility	5,622,722	$658,170.02	12%	1%	$ 766,546.73
2.7 14 Recreation Facilities	22,269,848				
2.7.1 05 Water Feature	12,264,109	$996,911.11	8%	1%	$1,161,066.18
2.7.2 10 Samuels Avenue	308,904	$21,350.59	7%	0%	$ 24,866.26
2.7.3 15 Marine Creek	3,180,897	$219,849.84	7%	0%	$ 256,051.13
2.7.4 20 Ham Branch	39,958	$3,006.88	8%	0%	$ 3,502.00
2.7.5 25 Riverside Park	594,394	$31,933.03	5%	0%	$ 37,191.24
2.7.6 30 Rockwood Park - West	156,711	$10,934.08	7%	0%	$ 12,734.53
2.7.7 35 Riverside Oxbow/Gateway Park	5,724,877	$313,925.16	5%	0.41%	$ 365,617.24
2.8 15 Flood Control and Diversion Structures	12,116,580				
2.8.1 10 Trinity Point	12,116,580	$2,302,889.07	19%	3%	$2,682,091.30
2.9 30 Planning, Engineering, and Design	32,717,096	$2,607,877.92	8%	3%	$3,037,300.75
2.10 31 Construction Management	40,432,378	$1,068,991.81	3%	1%	$1,245,015.96
2.11 33 HTRW	24,822,555				
2.11.1 Environmental Assessments	2,628,880	$758,874.83	29%	1%	$ 883,833.97
2.11.2 Site Remediation	19,832,531	$5,725,026.99	29%	7%	$6,667,731.11
2.11.3 Remediation Program Management	2,361,144	$681,587.87	29%	1%	$ 793,820.65

TABLE 6 – COST RISK FACTOR SENSITIVITY ANALYSIS	
Risk Factor (Number & Description)	**Contribution to Variance**
1.5: Material Cost (High Historic Volatility)	13.2%
6.1: Design Changes - Channels	9.3%
1.4: Fuel Cost	8.5%
8: HTRW	7.0%
5: Number of Contract Owners; Contract Capacity	7.0%
4: Contract Packaging/Size	6.4%
1.1: Craft Labor Cost	5.6%
1.3: Equipment Cost (ex fuel)	5.2%
14.2: Technical Complexity - Roadway Bridges	5.2%
6.2: Design Changes - Roadway Bridges	5.1%
2: Land Acquisition Cost	3.7%
14.1: Technical Complexity - Flood Control and Diversion Structures	3.3%
6.5: Design Changes - Flood Control and Diversion Structures	3.3%
10: Relocation	2.6%
3: 138 kV Transmission Line Relocation	2.1%
6.3: Design Changes - Samuels Avenue Dam	1.9%
6.6: Design Changes - Valley Storage	1.7%
15: Contract Acquisition Strategy - Federal	1.6%
6.8: Design Changes - Planning, Engineering and Design	1.5%
6.9: Design Changes - Utilities	1.4%
14.3: Technical Complexity - Dams	1.3%
12.1: Utilities - City	0.5%
14.4: Technical Complexity - Levees and Floodwalls	0.5%
1.2: General Material Cost	0.4%
16: Equipment Productivity	0.4%
All Other Risk Factors	1.4%

4.3 Schedule Contingency

Overall project schedule contingency was quantified as 154 working days based on P80. Table 7 provides the implied, overall project schedule contingencies calculated for various levels of confidence. A sensitivity analysis for critical path and near critical path tasks is provided as Table 8.

The results of the stress tests used to identify critical path and near critical path tasks are presented in Appendix E. The probability density functions used to quantify schedule risk factors are presented in Appendix F. The *Monte Carlo* simulation report generated by Crystal Ball for schedule contingency analysis is provided as Appendix G.

5. Risk Management Recommendations

As stated earlier, it is important to note that the risk register can be an effective tool for managing risks throughout the lifecycle of the FWCC Project. As such, it is recommended that the risk register be updated as the project progresses through planning and implementation. Furthermore, CSRA should be considered within the context of an overall lifecycle risk management process. Likewise, risk management is generally most effectively employed as one of the key elements of project performance measurement, assessment and planning.

In functional terms, project risk management is a process of identifying risk factors, analyzing and quantifying the properties of those risk factors, mitigating the impact of the factors on planned project performance, and developing and implementing a risk management plan. Figure 2 provides a process map for risk management. It is important to note that many elements of the risk management process have been performed as part of the CSRA and the tools necessary to periodically update the CSRA during the project lifecycle have been developed.

An important next step in the risk management process is to develop a risk management plan that will facilitate control of risk factors and their potential impacts throughout the project lifecycle. The risk register and sensitivity analyses conducted as part of the CSRA should be used as a guide to help ensure that future risk management efforts are both appropriate and cost beneficial.

Effectively managing a project throughout its lifecycle generally requires a systematic approach to planning, implementation, measurement, and assessment that interfaces with the strategic objectives, constraints and contexts of the project sponsors and stakeholders. While the risk management process is just one part of the overall project planning processes illustrated in Figure 3, it is best incorporated (particularly prior to project implementation) in a cyclical and iterative manner with the other planning processes so as to refine project plans with a goal of increasing project performance certainty.

TABLE 7 – TOTAL PROJECT SCHEDULE CONTINGENCY		
Baseline Schedule Completion Date		8/16/2018
Confidence Level	**Completion Date**	**Contingency (working days)**
0%	12/12/2017	-178
10%	7/20/2018	-20
20%	9/5/2018	15
30%	10/9/2018	39
40%	11/8/2018	61
50%	12/7/2018	82
60%	1/7/2019	103
70%	2/7/2019	126
80%	3/19/2019	154
90%	5/14/2019	194
100%	7/15/2020	500

TABLE 8 – SCHEDULE SENSITIVITY ANALYSIS	
Task (Number & Description)	**Contribution to Variance**
10.1.4 Construction	30.2%
6.2.7 Construct Bridge	16.2%
8.3.5 Tie-in Levee/Walls	11.5%
13.3 Construction	10.0%
8.3.4 Retaining Walls	8.9%
6.2.4 Relocate TXU 138 kV Overhead	8.4%
6.3.6 Construct Bridge	4.1%
8.2.4 Retaining Walls	2.5%
8.2.5 Tie-in Levee/Walls	1.8%
6.2.1 Concept Selection & Development	1.4%
10.3.4 Construction	1.4%
6.3.1 Concept Selection & Development	1.2%
6.3.2 Design	0.7%
10.2.4 Construction	0.6%
3.2.2 Acquisition	0.5%
13.4 CM	0.2%
3.2.1 Appraisals, Surveys, Engr, Legal	0.2%
6.3.3 Review TxDOT	0.1%
6.4.2 R-O-W Dedication	0.1%
6.3.4 Procurement	0.0%
6.3.5 Construct Temporary Detour	0.0%

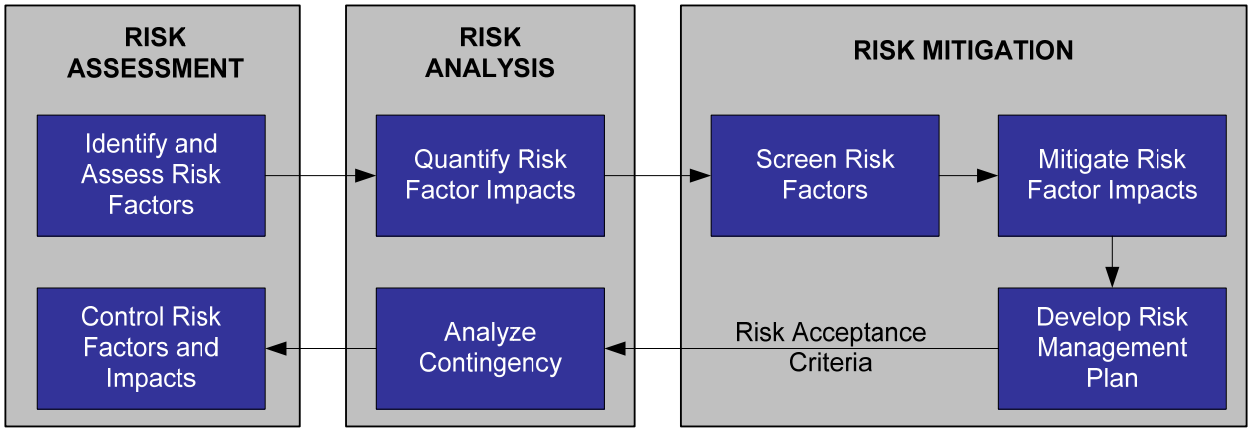


FIGURE 2 – PROJECT RISK MANAGMENT PROCESS MAP

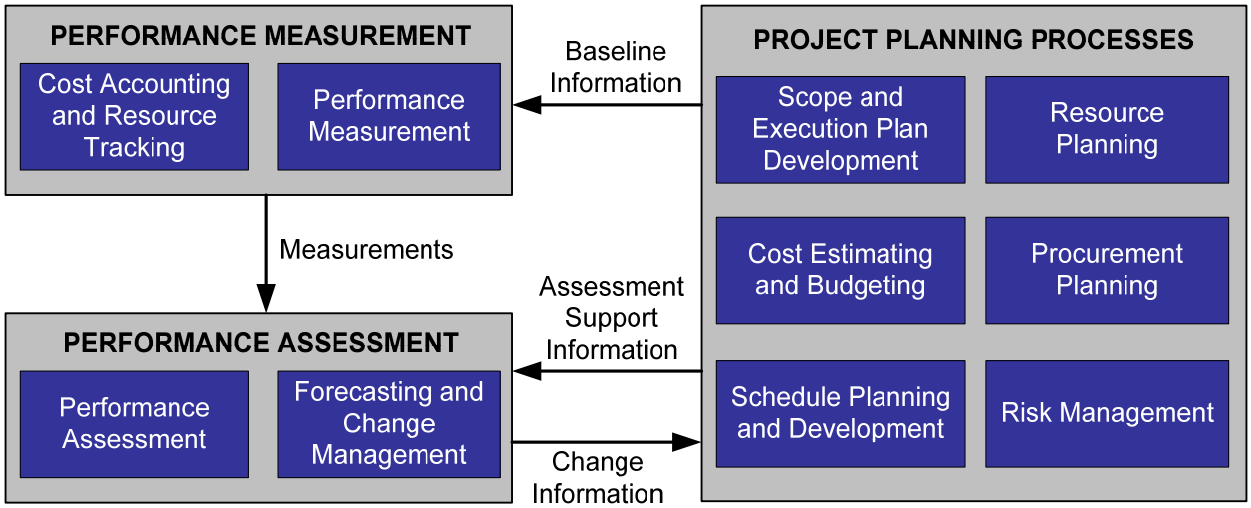


FIGURE 3 – PROJECT PERFORMANCE MEASUREMENT, ASSESSMENT AND PLANNING PROCESS MAP

Appendix A
Cost Estimate

FWCC.UPD
Fort Worth Central City - Preliminary Design
Escalation to 2007

Estimated by	Nick Agnew, CDM
Designed by	
Prepared by	Marc Schlebusch, CDM
Preparation Date	3/31/2008
Effective Date of Pricing	10/31/2007
Estimated Construction Time	2,600 Days

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Description	Page
Library Properties	**i**
Project Notes	**ii**
Markup Properties	**xii**
Project Cost Summary Report	**1**
1 01 Federal 220	1
1.1 01 Lands and Damages	1
1.1.1 10 Property Acquisition	1
1.1.2 15 Property Relocations	1
1.2 03 Reservoirs	1
1.2.1 05 Valley Storage	1
1.3 06 Fish and Wildlife Facilities	5
1.3.1 15 Ham Branch	5
1.4 11 Levees and Floodwalls	5
1.4 11 Levees and Floodwalls	6
1.4.1 Bypass Channel - North	6
1.4.2 Bypass Channel - South	6
1.5 15 Flood Control and Diversion Structures	7
1.5.1 05 Clear Fork	7
1.5.2 15 TRWD	8
1.6 18 Cultural Resource Preservation	9
1.7 30 Planning, Engineering, and Design	9
1.8 31 Construction Management	9
2 02 Non-Federal	9
2.1 01 Lands and Damages	9
2.1.1 05 Property Acquistion Assistance	10
2.1.2 10 Property Acquisition	10
2.1.3 15 Property Relocations	10
2.2 02 Relocations	10
2.2.1 05 Mobilization and Demobilization	10
2.2.2 10 General Demolition and Site Preparation	10
2.2.3 15 Utility Relocation - Sanitary Sewer, Potable Water, Storm Sewer and Natural Gas	10
2.2.3 15 Utility Relocation - Sanitary Sewer, Potable Water, Storm Sewer and Natural Gas	11
2.2.4 20 Utility Relocation - Electrical and Communication	11
2.2.5 25 Utility Relocation - Transmission Lines	12
2.3 04 Dams	12
2.3.1 05 Samuels Avenue Dam	12
2.3.2 10 Marine Creek Low Water Dam/Lock	12
2.3.2 10 Marine Creek Low Water Dam/Lock	13
2.4 06 Fish and Wildlife Facilities	13
2.4.1 10 Riverside Oxbow/Gateway	13
2.4.2 05 Rockwood Park	13

Description **Page**

2.5 08 Roads, Railroads and Bridges 13
2.5.1 05 Henderson Bridge and Roadway 14
2.5.2 10 White Settlement Bridge and Roadway 14
2.5.3 15 Main Street Bridge and Roadway 15
2.5.4 20 White Settlement Extension Bridge and Roadway 15
2.5.5 25 Other Street Modifications 15
2.5.6 30 Riverside Oxbow Park 15
2.5.6 30 Riverside Oxbow Park 16
2.5.7 35 Riverside Gateway Park 16
2.5.8 40 Bypass Channel Pedesterian Bridges 16
2.6 13 Pumping Plants 16
2.6.1 05 Stormwater Pumping Facility 16
2.7 14 Recreation Facilities 17
2.7.1 05 Water Feature 17
2.7.2 10 Samuels Avenue 18
2.7.3 15 Marine Creek 18
2.7.4 20 Ham Branch 18
2.7.5 25 Riverside Park 18
2.7.5 25 Riverside Park 19
2.7.6 30 Rockwood Park - West 19
2.7.7 35 Riverside Oxbow/Gateway Park 19
2.8 15 Flood Control and Diversion Structures 20
2.8.1 10 Trinity Point 20
2.9 30 Planning, Engineering, and Design 20
2.10 31 Construction Management 21
2.11 33 HTRW 21
2.11.1 Envrionmental Assessments 21
2.11.2 Site Remediation 21
2.11.3 Remediation Program Management 21
2.11.3 Remediation Program Management 22

Designed by

Estimated by
Nick Agnew, CDM
Prepared by
Marc Schlebusch, CDM

Design Document	
Document Date	1/31/2005
District	Fort Worth
Contact	Saji Alummuttil
Budget Year	2008
UOM System	Original

Direct Costs
LaborCost
EQCost
MatlCost
SubBidCost

Timeline/Currency

Preparation Date	3/31/2008
Escalation Date	9/30/2007
Eff. Pricing Date	10/31/2007
Estimated Duration	2600 Day(s)
Currency	US dollars
Exchange Rate	1.000000

Costbook CB06EB: MII English Cost Book 2006

Labor LB06NatFD: Labor National 2006
Note: http://www.wdol.gov/

Labor Rates
LaborCost1
LaborCost2
LaborCost3
LaborCost4

Equipment EP03R06: MII Equipment Region 6 2005
Note: Area factors updated with Region 6 2007 area and shipping factors.

06 SOUTHWEST

Sales Tax	0.00
Working Hours per Year	1,590
Labor Adjustment Factor	0.91
Cost of Money	4.75
Cost of Money Discount	25.00
Tire Recap Cost Factor	1.50
Tire Recap Wear Factor	1.80
Tire Repair Factor	0.15
Equipment Cost Factor	1.00
Standby Depreciation Factor	0.50

Fuel

Electricity	0.100
Gas	3.150
Diesel Off-Road	2.681
Diesel On-Road	3.192

Shipping Rates

Over 0 CWT	14.74
Over 240 CWT	14.51
Over 300 CWT	12.25
Over 400 CWT	10.94
Over 500 CWT	5.87
Over 700 CWT	5.39
Over 800 CWT	4.17

Date	Author	Note
3/31/2008	Schlebusch	1.0 PROJECT BACKGROUND The Central City Project is located within the vicinity of the downtown area of Fort Worth, Texas, along the West Fork and Clear Fork of the Trinity River and consists of a bypass channel, levee system, and associated improvements to divert flood flows around a segment of the existing floodway system. The original project estimate was prepared in January 2005 using Micro Computer Aided Cost Engineering System (MCACES) for Windows (MFW) software and subsequently updated in April 2005 based upon U. S. Army Corps of Engineers (USACE) comments. A Final Environmental Impact Statement (FEIS) was completed for the Central City Project in January 2006 and the Project Report was completed in March 2006. The Record of Decision (ROD) was signed, and the Project Report recommending the Community-Based Alternative was endorsed as being technically sound and environmentally acceptable, by the Assistant Secretary Army (ASA) for Civil Works (CW) on 7 April 2006. Section 116 of Public Law 108-447, dated 8 December 2004, authorized USACE's participation in construction of the Central City Project. Within that specific authorization, a subset which can be constructed by the USACE and the local sponsor, identified as the USACE's project, was defined at $110,000,000 federal cost and a $220,000,000 total project cost. The non-federal sponsor is the Tarrant Regional Water District (TRWD) and the City of Fort Worth is one of the local partners. These entities are also sponsors for the Riverside Oxbow Ecosystem Restoration Project. An Interim Feasibility Report and Integrated Environmental Assessment were completed in April 2003 for the Riverside Oxbow Project. The cost estimate, MCACES dated April 2003, was prepared as part of the Riverside Oxbow Feasibility Study. A Finding of No Significant Impact (FONSI) was signed by the Acting Fort Worth District Commander on 22 May 2003. On 29 May 2003 the recommended Plan for the Riverside Oxbow was approved by the Chief of Engineers. By letter dated 22 June 2006, the City of Fort Worth requested that the USACE's conduct an evaluation of the potential benefits of modifying the Central City Project to incorporate the Riverside Oxbow Ecosystem Restoration project area to accommodate valley storage requirements. In response to that letter request, the USACE's initial evaluation suggested the concept merited additional study which resulted in the preparation of a Supplemental EIS and supporting Technical Appendices. The following is a brief summary of each of the categories and work elements. Additional detail can be found in the Upper Trinity River Central City FEIS, Appendix C - Volume I Report and Volume II Plans dated January 2005 and in Supplement No.1 to the Final Environmental Impact Statement, Appendix C- Volume I Report and Volume II Supplemental Plans dated August 2007. 2.0 WORK ELEMENTS The cost estimate is formatted to be consistent with the Civil Works Breakdown Structure (CWBS). Using the CWBS the project has been segregated into fifteen (15) categories. Categories are further divided into additional sub-elements as appropriate to provide additional information and detail to individual items. Features of the modified Central City Project were developed by assessing the elements from two previous studies to determine the benefits merging certain elements. For this estimate features, quantities, construction approaches and plans were obtained largely from these prior studies with appropriate additions and deletions as required by the Modified Plan. 2.1 LAND (01) 2.1.1 ASSUMPTIONS This category includes costs associated with the acquisition of property for the project. The costs were tabulated by the major work element for which it will be acquired and property acquisition assistance costs. The four (4) major work elements are: bypass channel, water feature, valley storage (Riverside/Gateway and Marine Creek. The costs associated with each element of work were determined after review of the mass appraisals performed by James K. Norwood, Certified Real Estate Appraiser. Appraisals were performed on the Central City Project on behalf of the Tarrant Regional Water District and at the Riverside Oxbow/Gateway on behalf of the USACE. Estimated costs in this estimate are based on the best known information at the time of the estimate and may vary from the amounts in the Norwood appraisals given modifications in the project footprint. Costs were normalized to the baseline 2007 by factors provided by the Real Estate Division USACE Fort Worth District. A factor of 6% per year was used for land values and a 15% flat rate was used for administrative fees. Property acquisition assistance costs are included for consulting fees, legal assistance, and other permitting, subordinated fees, licenses that will be incurred as part of the land acquisition activity. These costs are for additional analysis, planning, acquisition documents and proceedings including any additional appraisals and possible condemnation proceedings. Base cost for these assistance cost was estimated at 13% of the Property Acquisition Cost and allocated at 5.2% Consulting, 5.2% Legal, and 2.6% Permitting & Licensing. A contingency was not been provided on these

Date	Author	Note
3/31/2008	Schlebusch	costs as they are considered separate consulting costs.

Landowner relocation costs were provided by a separate independent relocation study. This category includes anticipated costs for the relocation and moving of current property owners and tenants on the affected property. Costs for relocations of persons and businesses under this section are based on the report prepared by Pinnacle Consulting Management Group, Inc dated February 2, 2005. Costs were adjusted to baseline 2007 cost utilizing factors provided by Pinnacle Group of 4% compounded annually.

2.1.2 REFERENCES

James K. Norwood, Central City Trinity River Project (Bypass Channel), Updated Mass Appraisal, Phase I Real Property Acquisition, 16 November 2004

_____, Central City Trinity River Project (Interior Water Feature), Updated Mass Appraisal, Phase II Real Property Acquisition, 7 September 2004

_____, Central City Trinity River Project (Valley Storage), Updated Mass Appraisal, Phase III Real Property Acquisition, 9 December 2004

_____, Central City Trinity River Project (Marine Creek), Updated Mass Appraisal, Phase IV Real Property Acquisition, 9 December 2004

Pinnacle Consulting, Relocation Needs Assessment, 2 February 2005

_____, Property and Relocation Escalation Factors, Email dated 7 February 2008

2.2 RELOCATION (02)

2.2.1 ASSUMPTIONS

Utility relocations are required for the construction of the project. A variety of utility lines including sewers, storm sewers, water mains, gas mains, electrical and cable will need to be relocated and/or demolished. Existing utilities were contacted, maps obtained and impacted utilities identified. City and franchise utility owners were contacted regarding location and costs for major relocations. Cost for the relocation of the 138 kilovolt (kV) transmission line provided by TXU Electric. Construction Costs for these items have been included in this section.

This section also includes the demolition of structures and paving in the bypass channel and the water feature areas. Approximately 1,583,575 square feet of light industrial buildings will be demolished. The average building height was assumed to be 20 feet tall with 7.5% of building volume requiring disposal. Concrete paving was assumed to be 8-inch thick with approximately 48,780 square yards required for removal. Asphalt paving was assumed to be 6-inch thick with approximately 127,800 square yards of material removal. It is the intent of the local sponsors to develop a recycling and reuse plan to reduce landfill waste. Concrete debris may be used as armor in non-visible areas or crushed and used as fill during site construction. Demolition debris that cannot be recycled or reused beneficially will be hauled to the City of Fort Worth construction debris landfill on Bennen Avenue or the TRWD disposal area. There will be no disposal fees associated with construction debris disposed at either facility.

2.2.2 REFERENCES

Internal CDM Memorandum, Bypass Channel Building Demo Memorandum, 15 April 2005.

TXU Energy Service Quote for Relocating 138 kVA Line, Email dated 14 January 2005.

Date	Author	Note

3/31/2008 Schlebusch 2.3 RESERVOIRS (03)

2.3.1 ASSUMPTIONS
Samuels Avenue and University Drive are the two original locations which were identified for Valley Storage improvements. The Supplemental EIS added the Rockwood West, Ham Branch, Riverside Park, and the Riverside Oxbow/Gateways sites. Demolition of minor structures inherent to construction activities will be conducted as needed. It is the intent of the local sponsors to develop a recycling and reuse plan to reduce landfill waste. Demolition debris will be recycled or reused beneficially to reduce costs to the extent practicable. Demolition debris that cannot otherwise be used onsite will be hauled to the City of Fort Worth construction debris landfill on Bennen Avenue or the TRWD disposal area. There will be no disposal fees associated with construction debris disposed at either facility. Site improvements include removing unnecessary structures, site grading to allow for more valley storage and construction of new levees. In addition, new flood control structures, seeding and utility replacements are included in the expected costs. The University Drive site primarily consists of roadway and grade modifications/improvements. Borrow material required for University Drive site will be imported from the bypass channel and valley storage sites. For each of the Valley Storage excavation sites spoils/disposal areas were identified for haul-off of excavated materials. For major sites such as Riverside/Gateway, where haul routes incorporate public roadways, allowances were provided for street sweeping and restoration.

2.3.2 REFERENCES
Internal CDM Memorandum, Proposed Valley Storage Haul Routes for Modified Project,
9 November 2007.

2.4 DAMS (04)

2.4.1 ASSUMPTIONS
Downstream of the bypass channel a new dam structure will be constructed on the West Fork Trinity River. The dam will consist of seven (7) leaf gates placed into a concrete support structure. Three (3) sluice gates will also be provided in the bottom of the dam to assist in the control of upstream water levels. The concrete structure will have a maintenance access bridge to provide maintenance access to the leaf gates on the top of the dam and will be supported on a series of drilled shafts anchored in a bedrock foundation. A sheet piling system is proposed as a positive cut-off for seepage and as part of the construction sequencing plan.

A low water fixed broad crest weir dam is proposed on Marine Creek in near proximity to the Samuels Avenue Dam. The dam will be constructed of roller compacted concrete with a cast-in-place concrete cap on all portions above the stilling basin. Driven sheet piling will be used for seepage cut-off. A small lock structure for pleasure boats is proposed for connectivity between the Marine Creek and Samuels Dam impoundments. The lock will be a reinforced concrete structure with miter gates.

2.4.2 REFERENCES
General Electric Hydro Quote, Dam and Isolation Gates, 21 May 2004.

Rodney Hunt Quote, Locks, 2007.

2.5 FISH AND WILDLIFE FACILITIES (06)

2.5.1 ASSUMPTIONS
Fish and wildlife facilities include costs to restore and improve the various habitats at several valley storage sites. The primary locations for ecosystem features are Rockwood Park, Ham Branch and Riverside Oxbow/Gateway. The improvements that are included are seeding (both normal Bermuda grass and grassland/wetlands) and tree plantings. Excavations included with the development of valley storage capacity include the opening of the old Sycamore Creek Oxbow and excavation of the old Riverside Oxbow. In addition, 50,000 cubic yards of earthwork is included at the Rockwood site for the restoration of an existing oxbow. Costs for Ecosystem development including Riparian Forest, Wetlands, and Grasslands were prepared by the Environmental Branch USACE Fort Worth District.

2.5.2 REFERENCES

Date	Author	Note
3/31/2008	Schlebusch	USACE – Fort Worth District, 18 November 2005.

2.6 ROADS AND BRIDGES (08)

2.6.1 ASSUMPTIONS
A. Henderson Bridge and Roadway
Henderson Bridge will be a 6 lane standard bridge approximately 700 feet long with 10 feet wide concrete walks on both sides. Elevated embankments will lead up to the bridge on both sides of the future channel. The embankments will be supported by concrete retaining walls. The roadways will be constructed of concrete and include street lighting, pavement marking and signage. Construction of the roadway will require a temporary roadway detour.

B. White Settlement Bridge and Roadway
White Settlement Bridge will be a 4 lane standard bridge approximately 735 feet long with 10 feet wide concrete walks on both sides. Elevated embankments will lead up to the bridge on both sides of the future channel. The embankments will be supported by concrete retaining walls. The roadways will be constructed of concrete and include street lighting, pavement marking and signage. Construction of the roadway will require a temporary roadway. Installation of the final traffic signal for the White Settlement and Henderson Street intersection are included under this task.

C. Main Street Bridge and Roadway
Main Street Bridge will be a 4 lane designer (cable stayed) bridge approximately 406 feet long with 10 feet wide concrete walks on both sides. Elevated embankments will lead up to the bridge on both sides of the future channel. The embankments will be supported by concrete retaining walls. The roadways will be constructed of concrete. The roadways will be constructed of concrete and include street lighting, pavement marking and signage. Construction of the roadway will require a roadway detour onto an existing roadway.

D. White Settlement at Water Feature Bridge and Roadway
The White Settlement Bridge will be a 4 lane standard bridge approximately 450 feet long with 10 feet wide concrete walks on both sides. The bridge will cross the expanded Water Feature Elevated embankments will lead up to the bridge on both sides of the future channel. The embankments will be supported by concrete retaining walls. The roadways will be constructed of concrete. The roadways will be constructed of concrete and include street lighting, pavement marking and signage.

E. Beech Street Bridge
The existing Beech Street Bridge will be replaced with a 4 lane standard bridge approximately 115 feet long supported on drilled shafts. Elevated embankments will lead up to the bridge on both sides of the existing old oxbow channel. The interior embankments will be lined with concrete slope protection. The roadways will be constructed of concrete and pavement markings and signage.

F. Park Roads and Bridge
Costs are provided for over 4950 feet of two lane park entrance and roadways, 48,060 square feet of parking and one two lane park road bridge 103 ft in length.

G. Other Street Modifications
Additional costs were provided to perform modifications to the various local streets that will be affected by the construction of the channel. These modifications include providing turnouts, dead ends and patching of existing roads and drainage system. A contingency of 20% was included on Road and Bridge costs.

2.6.2 REFERENCES
TCB Independent Quote for Bridges Based on Texas Department of Transportation Guidance.

Contech Bridge Solutions Quote for Riverside Oxbow Pedestrian Bridges, 3 October 2007.

USACE, Beach Street/Park Road Bridge Quantities, Riverside Feasibility Study for LPP, MCACES Cost Estimate dated 7 April 2003.

Date	Author	Note
3/31/2008	Schlebusch	2.7 LEVEES AND FLOODWALLS (11) 2.7.1 ASSUMPTIONS Bypass Channel construction was been broken into two separate areas; North and South. The channel will consist of an excavated center channel with a new earthen levee constructed on the west side of the channel and multi-level reinforced concrete floodwalls on the east side. Both sides of the channel will have recreational paths for pedestrian access. All excess excavation material will be stockpiled in the future development area for use during construction of the flood control gates, backfill behind the retaining walls and White Settlement roadway embankment. Two pedestrian crossings will be constructed across the new channel and the West Fork Trinity River (just prior to the intersection with the new channel). Both pedestrian crossings will be designed to act as water breaks during a flood event. 2.8 STORMWATER PUMPING FACILITY (13) 2.8 ASSUMPTIONS A Stormwater Pumping Facility will be included in the project to maintain the water level inside the water feature area during high water period rainfall events on the West Fork. This facility will be located adjacent to the TRWD Gate and will be constructed at the same time as the gate structure. The facility will contain a total of four (4) 45,000 gallon per minute pumps and be constructed of a concrete wet well and a masonry building. An emergency generator will be shared with the TRWD gate structure. In addition, access and parking will be provided adjacent to the site. 2.9 RECREATION FACILITIES (14) 2.9.1 ASSUMPTIONS A. Valley Storage Sites For the Rockwood West, Samuels Avenue and Ham Branch Valley storage Sites the recreational facilities consist of the replacement of concrete trails. B. Water Feature A water feature will be constructed at the existing confluence of the West Fork Trinity River and the Clear Fork Trinity River. The Water Feature area will be constructed with concrete retaining walls and walks. Recirculation pumps and housings are also included in the estimate to assist in the circulation of water in the interior area. A preliminary design had not been developed at the time of the estimate. C. Marine Creek Modifications will be made to Marine Creek, upstream of Samuel Avenue Dam, in order to ensure that pedestrian access will be available once the dam is constructed and the water impoundment is created. The modifications include construction of concrete retaining walls and new walks, lighting, and pedestrian bridge. D. Riverside Park Costs include the reconstruction of existing parking and new entrance roads. Allowances are provided for new athletic fields lighting, or relocations depending upon the final design and park plan. E. Riverside/Gateway Park In addition to the hard and soft trail system and two pedestrian bridges a number of special construction items have been included. The design of these facilities has yet to be determined so these items are shown as standard unit cost from RS MEANS based upon approximate foot prints. These include a 1,000 square feet concession stand with restrooms, 1,500 square feet splash park, four covered basketball courts, and bleachers. Allowances for electrical service, and lighting are provided. 2.10 FLOOD CONTROL & DIVERSION STRUCTURES (15) 2.10.1 ASSUMPTIONS

Date	Author	Note
3/31/2008	Schlebusch	Three (3) gate control structures (Clear Fork, Trinity Point and TRWD) will be constructed for the project. All three (3) structures will be constructed of concrete with battered foundation piles providing support to bedrock. The Clear Fork gate will also have a sheet pile cutoff wall. Each gate will have one large (24 feet x 17 feet) vertical roller gate and at least one small (12 feet x 10 feet) vertical roller gate (Trinity Point Gate - two). The large gate will be used for normal water control and boat access to the interior area, while the smaller gate(s) will be used to seal off pedestrian access during flooding conditions. Gates can be inspected when open through internal access areas. In addition, each gate will have an enclosed control room and instrumentation system for monitoring the gates. Budgetary information on gate construction and installation costs was provided by General Electric Hydro. 2.10.2 REFERENCES General Electric Hydro Quote, Dam and Isolation Gates, 21 May 2004. 2.11 CULTURAL RESOURCE PRESERVATION (18) 2.11.1 ASSUMPTIONS These costs were determined by USACE in accordance with the requirements contained in the Programmatic Agreement between the USACE and Texas Historical Commission. 2.12 DESIGN SURVEY, TESTING AND LEGAL (21) 2.12.1 ASSUMPTIONS This category includes anticipated costs for design survey, project control, geotechnical exploration and testing, independent construction materials testing and legal assistance fees. The costs are divided into two main tasks: 1) Design Survey and Testing and 2) Legal Fees. Costs under this category are based on a percentage of the total construction cost with contingency. Based on the complexity, magnitude, and duration of the project the costs have been assumed as approximately 1.3% for Design Survey and Testing services and 1.0% for Legal Fees for a total of 2.3% for this category. No contingency was included on these costs. 2.13 PLANNING, ENGINEERING & DESIGN (30) 2.13.1 ASSUMPTIONS This category includes anticipated costs for design and permitting including but not limited to development of final designs, contract bid packages, cost estimation, engineering services during construction, environmental permitting, and permit fees. The costs are divided into two main tasks: 1) A/E Design Fees and 2) Permits, Fees, and Licenses. Costs under this category are based on a percentage of the total construction cost with contingency. Based on the complexity, magnitude, and duration of the project the costs have been assumed as approximately 5.0% for A/E Design Fees and 1.7% for Permits, Fees and Licenses for a total of 6.7% for this category. No contingency was included on these costs. 2.14 CONSTRUCTION MANAGEMENT (31) 2.14.1 ASSUMPTIONS This category includes anticipated costs for program management and construction management. A. Program Management This category includes anticipated costs for program management services during the design and construction of the project. Program management services are anticipated, but not limited to be: Agency Coordination/Management, Standards Development, Maintenance of Project Records and Base Files, Funding/ Grants and Cost Accounting, Contract Procurement, Project Schedule Maintenance, and Closeout. Costs under this category are based on a percentage of the total construction cost with contingency. Based on the complexity, magnitude, and duration of the project the costs have been assumed as approximately 4.9% for this category. No contingency was included on these costs. Program management was not included in for the Federal portion of this work.

Date	Author	Note
3/31/2008	Schlebusch	B. Construction Management This category includes anticipated costs for construction management including but not limited to costs for: meetings (pre-con, progress, post-con), field coordination, inspection, survey control, contract modifications, payment request processing. Costs under this category are based on a percentage of the total construction cost with contingency. Based on the complexity, magnitude, and duration of the project the costs have been assumed as approximately 4.6% for this category. No contingency was included on these costs. 2.14 HTRW (33) 2.14.1 ASSUMPTIONS The HTRW category includes costs for environmental services and remediation on the project and was developed based on the results of the environmental records review completed for the potentially impacted properties during the initial EIS phase. For the Phase I and Phase II site assessments the following allowances were used: Update the Phase I EIS data, 173 parcels at an cost of $1,000/ site; Phase II site assessments assumed 106 sites at $9,200/site: soil and groundwater testing 1350 samples at $335/sample and 413 samples at $430/sample; asbestos surveys estimated at 50 building at $1,150/structure Environmental remediation costs for the project were developed primarily for the potentially impacted properties within the proposed bypass channel at each of the sites with records indicating potential release of petroleum or hazardous chemicals. Costs include, but are not limited to, the following: - Investigation of assumed contaminated sites; - Excavation and disposal of underground storage tanks (USTs) and accompanying contaminated soils; - Placement of short-term groundwater recovery/treatment systems at locations with leaking USTs (LUSTs)/USTs; - Excavation and disposal of assumed volumes of contaminated soil based on the number of databases that each site appears within; - Analytical costs for characterization of the contaminated soils for disposal and confirmation of complete removal; and - Engineering design fees and administrative costs for following required regulatory guidelines and submittal of appropriate reports to regulatory agencies. Asbestos abatement costs were calculated based on factoring the total square footage buildings to be removed to determine office type space within the total building footprint which would likely contain asbestos. Of the total of 1.5 million square feet of buildings to be demolished, 50 % is assumed to be finished and of that amount 20% was assumed to contain asbestos. Abatement unit price were then used from MEANS Environmental Remediation Book to determine the estimated asbestos abatement cost. The HTRW construction costs are based on the best available information at this time and will be updated and refined as design development is advanced and more information can be obtained within the project footprint. 2.14.2 REFERENCES Internal CDM Memorandum, Asbestos Abatement Estimate, 22 May 2005. Accutest Quote, Laboratory Testing, 5 September 2006. 3.0 ENVIRONMENTAL CONCERNS General environmental concerns (for example, sediment and erosion control) during construction will be addressed through better management practices (BMPs). Hazardous materials will be addressed through Phase I and II environmental assessments during property acquisition. Any properties that are in need of remediation will be addressed as described in Section 2.14 above. 4.0 ESTIMATED CONSTRUCTION DURATION: The project duration (for bond calculation purposes) is assumed to have a duration of approximately 10 years or 2,600 (working day is defined as an 8-hour day Monday through Friday excluding major holidays). It is assumed that actual project duration is approximately 240 months from notice to proceed (NTP). The NTP date and field mobilization date are unknown at this phase of the conceptual planning. The midpoint of the construction project has been estimated based on an assumed NTP date of 2008.

Date	Author	Note
3/31/2008	Schlebusch	5.0 ESTIMATE PREPARATION: This cost estimate was prepared using the MCACES Second Generation software (MII). The following supporting databases were used in the preparation of the cost estimate: LB06NatFD (Labor National 2006), EP03R06 (MII Equipment Cost Book for Region 6 2005), and CB06EB (MII English Cost Book 2006). The quantities used in the estimate preparation were determined from the conceptual plans (drawings) for the work. This cost estimate assumes that all the necessary equipment, labor, and material will be available for the project because it is located in Fort Worth, Texas and near Dallas, Texas both of which are major metropolitan areas. The structure of the estimate is organized according to the CWBS in accordance with Engineer Regulation for Civil Works Cost Engineering (ER 1110-2-1302), 31 March 1994. The costs presented in this estimate are considered to have an accuracy range of +50/-30. All estimates are prepared by qualified estimating staff within the CDM Constructors division of CDM. During the estimating process an ongoing review of all work takes place as the estimate is being prepared. At the completion of all estimates, the Regional Chief Estimator performs a quality assurance review of the estimate, to verify that it is within the standard guidelines of CDM Constructors. 5.1 LABOR RATES: This estimate is based on the latest available/supported MCACES MII labor rate database (LB06NatFD), which has been updated using the 31 August 2007 Davis Bacon Wage Determinations for the Fort Worth, Texas for the base and fringe rates. In addition, payroll taxes and insurance have been updated for each laborer using the following 2007 factors: - Federal/State Unemployment Taxes: 6.17% (0.8% Federal/5.37% State) - Social Security Taxes: 7.65% - Workmen's Compensation: 10.29% No overtime was assumed for this estimate. 5.2 EQUIPMENT RATES: This estimate is based on the latest available/supported MCACES MII equipment rate database (EP03R06), which has been updated using the latest Region 6 (Texas) Area Factors, as provided in Appendix B of Engineering Pamphlet EP 1110-1-8, dated 31 July 2007. The Area Factors were further adjusted to account for current fuel costs (gasoline and diesel) at the time of estimate preparation and therefore the equipment rates used in the estimate more accurately represent current 2007 prices. The sales tax for this estimate was set at 0% because Texas state sales tax is exempt from government sponsored work. 5.3 CONTRACTORS/SUBCONTRACTORS: The procurement plan for this project currently assumes the work will be performed by a minimum of 11 General Contractors: GENERAL CONTRACTOR Bridge and Roadway General Contractor – Henderson, Main, and White Settlement Bridge and Roadway General Contractor – Beach Street Bridge and Roadway General Contractor – White Settlement Extension and Bridge Bypass Channel and Levees General Contractor Isolation Gate General Contractor – Trinity Point Isolation Gate General Contractor – Clear Fork and TRWD Ham Branch Ecosystem General Contractor Riverside Gateway General Contractor Dam General Contractor

Date	Author	Note
3/31/2008	Schlebusch	Valley Storage General Contractor Environmental Remediation General Contractor The estimate assumes that the following Subcontractors to the General Contractors: SUBCONTRACTOR Bridge and Roadway Subcontractor Building Subcontractor Concrete Subcontractor Dam Subcontractor Demolition Subcontractor Drilling/Caisson Subcontractor Electrical Subcontractor Electrical Utility Subcontractor Environmental Remediation Subcontractor Gate Control Structures Subcontractor Hauling Subcontractor Landscape Subcontractor Mechanical Subcontractor Transportation Subcontractor Water and Sewer Utility Subcontractor The following General Contractor overhead, profit, and bond markups are assumed: Home Office Overhead (HOOH) = 3% Field Office Overhead (JOOH) = 10% Profit = 8% Bond = 2.5% For each of the subcontractors, the following subcontractor overhead,profit, and bond markups are assumed: Home Office Overhead (HOOH) = 3% Field Office Overhead (JOOH) = 2% Profit = 8% Bond = 2.5% The General Contractor also applies their markups on work done by the subcontractor. 5.4 PROJECT OWNER MARKUPS: The owner also has markups on the project level that are applied after contractor markups. These markups are included below. The previous MCACES MFW estimates were prepared in 2005 dollars. The costs in the MII estimate are escalated to 10/31/2007 based on the Civil Works Construction Cost Index revised 09/30/2007. The effective date for the estimate is 10/31/2007. Project owner markups (escalation to midpoint of construction and contingency) beyond 2007 were not applied in the MCACES MII estimate but rather in a separate Total Project Summary table. Escalation to midpoint and contingency was not applied within the MCACES MII estimate, but rather applied in a separate total project summary. A rate of 6% per year

Date	Author	Note
3/31/2008	Schlebusch	was used to escalate real estate costs for the project ot midpoint. The real estate escalation rate of 6% per year was provided by USACE and James K. Norwood, Certified Real Estate Appraiser. A rate of 3.5% per year was used to escalate construction costs for the project to midpoint. The 3.5% per year escalation rate was based on research using the Construction Cost Index (CCI). Because of the duration and scheduling of the project different midpoints of construction were used for the major components of the work. For the base estimate contingency was applied to lands and damages property acquisition and owner relocations and all construction features. Total project contingency was quantified using the August 2007 USACE Cost and Schedule Risk Analysis Process guidance and is based on Monte Carlo simulation of the cost estimate using Crystal Ball software. The cost risk analysis served to quantify contingency based on an eighty percent level of confidence and corresponds directly to the risk register prepared by the project delivery team. Total project contingency was quantitatively allocated to individual project features based on dollar-weighted relative risk as measured by the standard deviation of the feature-specific Crystal Ball forecast. Government sponsored work is exempt from sales tax in the state of Texas. 5.5 DETAIL COST SOURCES: The MCACES MII supporting databases (labor, equipment, materials, and UPB) were used whenever possible for this cost estimate. Direct detail costs were derived using several sources of cost information. The following are the reference codes used in the detail section to identify sources and are listed in order of usage within the estimate: 1) MCACES MII English Cost Book 2006 (UPB) (as listed by database ID) Note: Labor, equipment and crews' databases have been updated to 2007 using current cost data. 2) Allowances, estimator's judgment, vendor quotes or costs based on previous work by CDM (no code listed) 3) CostWorks 2008 from RS Means "0000000000" 6.0 RISK ANALYSIS The overall risk management process for the project involves (1) identifying risk factors, (2) analyzing and quantifying the properties of those risk factors, (3) mitigating the impact of the factors on planned project performance, and (4) developing and implementing a risk management plan. While the risk management process is just one part of the overall project planning process, it is incorporated in a concurrent and iterative manner with the other planning processes so as to refine project plans with a goal of increasing performance certainty. The first two elements of the risk management process (identifying risk factors; analyzing and quantifying the properties of those risk factors) have been performed in accordance with the Cost and Schedule Risk Analysis Process described in the August 2007 guidance developed by the USACE Walla Walla District.

Direct Cost Markups	**Category**	**Method**
Productivity	Productivity	Productivity
Overtime	Overtime	Overtime

	Days/Week	*Hours/Shift*	*Shifts/Day*	*1st Shift*	*2nd Shift*	*3rd Shift*
Standard	*5.00*	*8.00*	*1.00*	*8.00*	*0.00*	*0.00*
Actual	*5.00*	*8.00*	*1.00*	*8.00*	*0.00*	*0.00*

Day	*OT Factor*	*Working*	*OT Percent*	*FCCM Percent*
Monday	*1.50*	*Yes*	*0.00*	*0.00*
Tuesday	*1.50*	*Yes*		
Wednesday	*1.50*	*Yes*		
Thursday	*1.50*	*Yes*		
Friday	*1.50*	*Yes*		
Saturday	*1.50*	*No*		
Sunday	*2.00*	*No*		

Sales Tax	TaxAdj	Running % on Selected Costs
MatlCost		

Contractor Markups	**Category**	**Method**
JOOH	JOOH	Running %
JOOH - Subcontractor (Small Tools)	JOOH	% of Labor
JOOH - Subcontractor	JOOH	JOOH (Calculated)
HOOH	HOOH	Running %
HOOH - Subcontractor	Allowance	Running %
Profit	Profit	Running %
Profit - Subcontractor	Allowance	Running %
Bond	Bond	Running %
Bond - Subcontractor	Bond	Running %
Excise Tax	Excise	Running %

Owner Markups	**Category**	**Method**
Escalation 0407 - 15 Floodway Control	Escalation	Escalation

StartDate	*StartIndex*	*EndDate*	*EndIndex*	*Escalation*
5/21/2004	*571.55*	*10/31/2007*	*674.67*	*18.04*

Escalation 0507 - 02 Relocations	Escalation		Escalation	
StartDate	*StartIndex*	*EndDate*	*EndIndex*	*Escalation*
2/18/2005	*617.37*	*10/31/2007*	*685.22*	*10.99*
Escalation 0507 - 03 Reservoirs	Escalation		Escalation	
StartDate	*StartIndex*	*EndDate*	*EndIndex*	*Escalation*
1/31/2005	*648.68*	*10/31/2007*	*710.72*	*9.56*
Escalation 0507 - 04 Dams	Escalation		Escalation	
StartDate	*StartIndex*	*EndDate*	*EndIndex*	*Escalation*
1/31/2005	*598.72*	*10/31/2007*	*674.88*	*12.72*

Escalation 0507 - 05 Locks	Escalation		Escalation	
StartDate	*StartIndex*	*EndDate*	*EndIndex*	*Escalation*
1/31/2005	*599.22*	*10/31/2007*	*678.42*	*13.22*
Escalation 0507 - 06 Fish and Wildlife	Escalation		Escalation	
StartDate	*StartIndex*	*EndDate*	*EndIndex*	*Escalation*
1/31/2005	*597.79*	*1/31/2008*	*674.67*	*12.86*
Escalation 0507 - 08 Roads and Bridges	Escalation		Escalation	
StartDate	*StartIndex*	*EndDate*	*EndIndex*	*Escalation*
1/31/2005	*617.37*	*10/31/2007*	*685.22*	*10.99*
Escalation 0507 - 11 Levees and Floodwalls	Escalation		Escalation	
StartDate	*StartIndex*	*EndDate*	*EndIndex*	*Escalation*
1/31/2005	*618.00*	*10/31/2007*	*694.08*	*12.31*
Escalation 0507 - 13 Pumping Plant	Escalation		Escalation	
StartDate	*StartIndex*	*EndDate*	*EndIndex*	*Escalation*
1/31/2005	*603.75*	*10/31/2007*	*694.02*	*14.95*
Escalation 0507 - 14 Recreation Facilities	Escalation		Escalation	
StartDate	*StartIndex*	*EndDate*	*EndIndex*	*Escalation*
1/31/2005	*603.75*	*10/31/2007*	*694.02*	*14.95*
Escalation 0507 - 15 Floodway Control	Escalation		Escalation	
StartDate	*StartIndex*	*EndDate*	*EndIndex*	*Escalation*
1/31/2005	*597.76*	*10/31/2007*	*674.67*	*12.87*
Escalation 0507 - 18 Cultural	Escalation		Escalation	
StartDate	*StartIndex*	*EndDate*	*EndIndex*	*Escalation*
1/31/2005	*603.75*	*10/31/2007*	*694.02*	*14.95*
Escalation 0507 - 19 Buildings	Escalation		Escalation	
StartDate	*StartIndex*	*EndDate*	*EndIndex*	*Escalation*
1/31/2005	*603.75*	*10/31/2007*	*694.02*	*14.95*
Escalation 0507 - 33 HTRW	Escalation		Escalation	
StartDate	*StartIndex*	*EndDate*	*EndIndex*	*Escalation*
1/31/2005	*604.49*	*10/31/2007*	*682.63*	*12.93*
Escalation 0607 - 02 Relocations	Escalation		Escalation	
StartDate	*StartIndex*	*EndDate*	*EndIndex*	*Escalation*
1/31/2006	*643.94*	*10/31/2007*	*685.22*	*6.41*
Escalation 0607 - 03 Reservoirs	Escalation		Escalation	
StartDate	*StartIndex*	*EndDate*	*EndIndex*	*Escalation*
1/31/2006	*668.01*	*10/31/2007*	*710.72*	*6.39*
Escalation 0607 - 04 Dams	Escalation		Escalation	

StartDate	*StartIndex*	*EndDate*	*EndIndex*	*Escalation*
1/31/2006	*631.20*	*10/31/2007*	*674.88*	*6.92*
Escalation 0607 - 05 Locks	Escalation		Escalation	
StartDate	*StartIndex*	*EndDate*	*EndIndex*	*Escalation*
1/31/2006	*630.30*	*10/31/2007*	*678.42*	*7.63*
Escalation 0607 - 06 Fish and Wildlife	Escalation		Escalation	
StartDate	*StartIndex*	*EndDate*	*EndIndex*	*Escalation*
1/31/2006	*630.14*	*10/31/2007*	*674.67*	*7.07*
Escalation 0607 - 08 Roads and Bridges	Escalation		Escalation	
StartDate	*StartIndex*	*EndDate*	*EndIndex*	*Escalation*
1/31/2006	*643.94*	*10/31/2007*	*685.22*	*6.41*
Escalation 0607 - 11 Levees	Escalation		Escalation	
StartDate	*StartIndex*	*EndDate*	*EndIndex*	*Escalation*
1/31/2006	*651.23*	*10/31/2007*	*694.08*	*6.58*
Escalation 0607 - 13 Pumping Plant	Escalation		Escalation	
StartDate	*StartIndex*	*EndDate*	*EndIndex*	*Escalation*
1/31/2006	*638.50*	*10/31/2007*	*694.02*	*8.70*
Escalation 0607 - 14 Recreation	Escalation		Escalation	
StartDate	*StartIndex*	*EndDate*	*EndIndex*	*Escalation*
1/31/2006	*638.50*	*10/31/2007*	*694.02*	*8.70*
Escalation 0607 - 15 Floodway Control	Escalation		Escalation	
StartDate	*StartIndex*	*EndDate*	*EndIndex*	*Escalation*
1/31/2006	*630.14*	*10/31/2007*	*674.67*	*7.07*
Escalation 0607 - 18 Cultural Resource	Escalation		Escalation	
StartDate	*StartIndex*	*EndDate*	*EndIndex*	*Escalation*
1/31/2006	*638.50*	*10/31/2007*	*694.02*	*8.70*
Escalation 0607 - 19 Buildings	Escalation		Escalation	
StartDate	*StartIndex*	*EndDate*	*EndIndex*	*Escalation*
1/31/2006	*638.50*	*10/31/2007*	*694.02*	*8.70*
Escalation 0607 - 33 HTRW	Escalation		Escalation	
StartDate	*StartIndex*	*EndDate*	*EndIndex*	*Escalation*
1/31/2006	*638.08*	*10/31/2007*	*682.63*	*6.98*
Contingency - Lands and Damages	Contingency		Running %	
Contingency	Contingency		Running %	
SIOH	SIOH		Running %	

Description	Quantity	UOM	LaborCost	EQCost	MatlCost	SubBidCost	CostToPrime	ContractCost	Escalation	ProjectCost
Project Cost Summary Report			**34,436,556**	**30,392,375**	**47,897,906**	**283,214,667**	**233,419,764**	**474,784,054**	**31,959,573**	**506,743,626**
1 01 Federal 220	**1.00**	**LS**	**15,793,456**	**19,524,688**	**23,525,268**	**60,813,451**	**79,846,330**	**149,771,957**	**9,336,959**	**159,108,916**
(Note: Section 116 of Public Law 108-447, dated 8 December 2004, authorized USACE's participation in construction of the Central City Project. Within that specific authorization, a subset which can be constructed by the USACE and the local sponsor, identified as the USACE's project, was defined at $110,000,000 federal cost and a $220,000,000 total project cost.)										
1.1 01 Lands and Damages	**1.00**	**LS**	**0**	**0**	**0**	**31,183,334**	**0**	**31,183,334**	**0**	**31,183,334**
(Note: This category includes costs associated with the acquisition of property for the project. The costs were tabulated by the major work element for which it will be acquired and property acquisition assistance costs. The four (4) major work elements are: bypass channel, water feature, valley storage (Riverside/Gateway and Marine Creek. The costs associated with each element of work were determined after review of the mass appraisals performed by James K. Norwood, Certified Real Estate Appraiser. Appraisals were performed on the Central City Project on behalf of the Tarrant Regional Water District and at the Riverside Oxbow/Gateway on behalf of the USACE. Estimated costs in this estimate are based on the best known information at the time of the estimate and may vary from the amounts in the Norwood appraisals given modifications in the project footprint. Costs were normalized to the baseline 2007 by factors provided by the Real Estate Division USACE Fort Worth District. A factor of 6% per year was used for land values and a 15% flat rate was used for administrative fees. Landowner relocation costs were provided by a separate independent relocation study. This category includes anticipated costs for the relocation and moving of current property owners and tenants on the affected property. Costs for relocations of persons and businesses under this section are based on the report prepared by Pinnacle Consulting Management Group, Inc dated February 2, 2005. Costs were adjusted to baseline 2007 cost utilizing factors provided by Pinnacle Group of 4% compounded annually.)										
1.1.1 10 Property Acquisition	**1.00**	**LS**	**0**	**0**	**0**	**26,568,716**	**0**	**26,568,716**	**0**	**26,568,716**
1.1.2 15 Property Relocations	**1.00**	**LS**	**0**	**0**	**0**	**4,614,618**	**0**	**4,614,618**	**0**	**4,614,618**
1.2 03 Reservoirs	**1.00**	**LS**	**6,026,803**	**13,602,961**	**6,868,235**	**2,542,600**	**32,511,328**	**40,776,715**	**2,492,081**	**43,268,795**
(Note: Samuels Avenue and University Drive are the two original locations which were identified for Valley Storage improvements. The Supplemental EIS added the Rockwood West, Ham Branch, Riverside Park, and the Riverside Oxbow/Gateways sites. Demolition of minor structures inherent to construction activities will be conducted as needed. It is the intent of the local sponsors to develop a recycling and reuse plan to reduce landfill waste. Demolition debris will be recycled or reused beneficially to reduce costs to the extent practicable. Demolition debris that cannot otherwise be used onsite will be hauled to the City of Fort Worth construction debris landfill on Bennen Avenue or the TRWD disposal area. There will be no disposal fees associated with construction debris disposed at either facility. Site improvements include removing unnecessary structures, site grading to allow for more valley storage and construction of new levees. In addition, new flood control structures, seeding and utility replacements are included in the expected costs. The University Drive site primarily consists of roadway and grade modifications/improvements. Borrow material required for University Drive site will be imported from the bypass channel and valley storage sites. For each of the Valley Storage excavation sites spoils/disposal areas were identified for haul-off of excavated materials. For major sites such as Riverside/Gateway, where haul routes incorporate public roadways, allowances were provided for street sweeping and restoration.)										
1.2.1 05 Valley Storage	**1.00**	**LS**	**6,026,803**	**13,602,961**	**6,868,235**	**2,542,600**	**32,511,328**	**40,776,715**	**2,492,081**	**43,268,795**
1.2.1.1 05 Samuels Avenue Sites	**1.00**	**LS**	**621,925**	**2,433,689**	**866,191**	**0**	**4,108,605**	**5,153,140**	**170,445**	**5,323,585**

Description	Quantity	UOM	LaborCost	EQCost	MatlCost	SubBidCost	CostToPrime	ContractCost	Escalation	ProjectCost
(Note: An estimated volume of 737,000 BCY of soil and 130,000 BCY of rock will be excavated from the Samuels Avenue north and south sites. The estimated excavation volume from the Samuels Avenue north site is 552,000 BCY (422,000 BCY soil and 130,000 BCY rock). The estimated excavation volume from the Samuels Avenue south site is 315,000 BCY. All the excavated material from the Samuels Avenue north site will be hauled to the city landfill site. All the excavated material will be hauled to the city impound lot. Soil will be dumped, spread, and compacted at each site.)										
1.2.1.1.1 Mobilization and Demobilization	**1.00**	**LS**	**4,439**	**9,863**	**0**	**0**	**17,391**	**21,812**	**0**	**21,812**
1.2.1.1.2 Site Preparation	**1.00**	**LS**	**172,220**	**533,692**	**2,257**	**0**	**762,145**	**955,905**	**61,082**	**1,016,988**
			0.22	*1.56*	*0.00*	*0.00*	*1.84*	*2.31*		*2.31*
1.2.1.1.3 Excavation and Hauling	**867,000.00**	**BCY**	**188,599**	**1,351,042**	**0**	**0**	**1,598,795**	**2,005,258**	**0**	**2,005,258**
			0.13	*0.32*	*0.00*	*0.00*	*0.48*	*0.60*		*0.60*
1.2.1.1.4 Fill Placement and Compaction	**767,000.00**	**BCY**	**98,858**	**246,191**	**0**	**0**	**365,727**	**458,707**	**0**	**458,707**
(Note: Spread and compact dumped fill from Samuels Avenue sites. An estimated 506,400 LCY hauled to the city landfill and 378,000 LCY hauled to the city impound lot.)										
1.2.1.1.5 Drainage	**1.00**	**LS**	**4,175**	**13**	**15,457**	**0**	**23,355**	**29,293**	**1,872**	**31,165**
1.2.1.1.6 Site Restoration	**1.00**	**LS**	**153,633**	**292,888**	**848,478**	**0**	**1,341,192**	**1,682,165**	**107,490**	**1,789,655**
1.2.1.2 10 University Drive	**1.00**	**LS**	**348,972**	**300,121**	**1,560,753**	**325,000**	**2,944,607**	**3,693,217**	**259,436**	**3,952,653**
(Note: Excavated material (an estimated 130,000 BCY) from the Rockwood Park - West site will be brought to the University Drive site. Soil from the Rockwood Park - West site will be spread and compacted.)										
1.2.1.2.1 Mobilization and Demobilization	**1.00**	**LS**	**935**	**2,037**	**0**	**0**	**3,616**	**4,535**	**0**	**4,535**
1.2.1.2.2 Site Preparation	**1.00**	**LS**	**139,773**	**170,952**	**760**	**0**	**387,998**	**486,639**	**31,096**	**517,735**
			0.13	*0.43*	*0.00*	*0.00*	*0.59*	*0.74*		*0.79*
1.2.1.2.3 Fill Placement and Compaction	**130,000.00**	**BCY**	**17,438**	**55,800**	**0**	**0**	**76,885**	**96,431**	**6,162**	**102,593**
(Note: Spread and compact dumped fill from Rockwood Park West (130,000 BCY).)										
1.2.1.2.4 Site Restoration	**1.00**	**LS**	**12,605**	**26,185**	**60,930**	**0**	**112,717**	**141,373**	**9,034**	**150,406**
1.2.1.2.5 Pavement, Sidewalks, Curbs, and Gutter	**1.00**	**LS**	**67,161**	**18,242**	**928,926**	**25,000**	**1,194,772**	**1,498,520**	**96,749**	**1,595,270**
1.2.1.2.6 Retaining Wall	**1.00**	**LS**	**78,370**	**18,811**	**249,051**	**0**	**406,334**	**509,637**	**32,566**	**542,203**

Description	Quantity	UOM	LaborCost	EQCost	MatlCost	SubBidCost	CostToPrime	ContractCost	Escalation	ProjectCost
1.2.1.2.7 Drainage and Sewerage	**1.00**	**LS**	**32,691**	**8,095**	**321,087**	**0**	**420,222**	**527,056**	**42,814**	**569,869**
1.2.1.2.8 Electrical	**1.00**	**LS**	**0**	**0**	**0**	**300,000**	**342,063**	**429,026**	**41,015**	**470,041**
1.2.1.3 15 Ham Branch	**1.00**	**LS**	**89,950**	**72,219**	**177,705**	**194,000**	**606,968**	**761,278**	**61,097**	**822,375**
(Note: An estimated 3,000 BCY of material will be excavated and used for the Ham Branch Levee. Soil will be dumped, spread, and compacted at each site.)										
1.2.1.3.1 Mobilization and Demobilization	**1.00**	**LS**	**2,336**	**5,195**	**0**	**0**	**9,157**	**11,485**	**0**	**11,485**
1.2.1.3.2 Site Preparation	**1.00**	**LS**	**15,061**	**33,829**	**760**	**0**	**55,264**	**69,313**	**4,429**	**73,742**
			0.44	*1.62*	*0.00*	*0.00*	*2.27*	*2.85*		*3.04*
1.2.1.3.3 Excavation and Hauling	**3,000.00**	**BCY**	**1,315**	**4,874**	**0**	**0**	**6,824**	**8,559**	**547**	**9,106**
			0.13	*0.43*	*0.00*	*0.00*	*0.59*	*0.74*		*0.74*
1.2.1.3.4 Fill Placement and Compaction	**19,000.00**	**BCY**	**2,549**	**8,155**	**0**	**0**	**11,237**	**14,094**	**0**	**14,094**
(Note: Spread and compact dumped fill from Ham Branch (3,000 BCY) and Riverside Park (16,000 BCY) sites. Excavation and hauling of material from Riverside Park is included in the costs for Valley Storage - Riverside Park.)										
1.2.1.3.5 Site Restoration	**1.00**	**LS**	**5,082**	**6,675**	**21,205**	**0**	**35,126**	**44,056**	**2,815**	**46,872**
1.2.1.3.6 Pavement, Sidewalks, Curbs, and Gutter	**1.00**	**LS**	**11,607**	**9,011**	**95,499**	**0**	**135,074**	**169,414**	**10,826**	**180,239**
1.2.1.3.7 Retaining Walls	**1.00**	**LS**	**52,000**	**4,480**	**60,240**	**194,000**	**354,286**	**444,357**	**42,480**	**486,837**
1.2.1.4 20 Riverside Park	**1.00**	**LS**	**406,192**	**740,598**	**280,781**	**149,400**	**1,790,572**	**2,245,791**	**129,451**	**2,375,242**
(Note: An estimated total volume of 302,000 BCY at Riverside Park will be excavated and hauled to the Ham Branch Levee (16,000 BCY) and the city land fill/city impound lot (286,000 BCY). Soil will be dumped, spread, and compacted at each site.)										
1.2.1.4.1 Mobilization and Demobilization	**1.00**	**LS**	**2,570**	**5,652**	**0**	**0**	**10,002**	**12,545**	**0**	**12,545**
1.2.1.4.2 Site Preparation	**1.00**	**LS**	**75,995**	**123,825**	**20,930**	**0**	**251,931**	**315,979**	**20,191**	**336,170**
			0.73	*1.50*	*0.00*	*0.49*	*3.10*	*3.89*		*4.14*
1.2.1.4.3 Excavation and Hauling	**302,000.00**	**BCY**	**219,057**	**453,951**	**0**	**149,400**	**936,667**	**1,174,797**	**75,070**	**1,249,867**
			0.13	*0.43*	*0.00*	*0.00*	*0.59*	*0.74*		*0.74*

Description	Quantity	UOM	LaborCost	EQCost	MatlCost	SubBidCost	CostToPrime	ContractCost	Escalation	ProjectCost
1.2.1.4.4 Fill Placement and Compaction	**286,000.00**	**BCY**	**38,353**	**122,713**	**0**	**0**	**169,089**	**212,076**	**0**	**212,076**
(Note: Spread and compact dumped fill from Riverside Park (286,000 BCY) at the city landfill and city impound lot. Placement and compaction of material hauled for the Ham Branch Levee is included in the costs for Valley Storage - Ham Branch.)										
1.2.1.4.5 Site Restoration	**1.00**	**LS**	**15,414**	**16,967**	**85,831**	**0**	**128,856**	**161,615**	**10,327**	**171,942**
1.2.1.4.6 Drainage	**1.00**	**LS**	**16,820**	**8,394**	**59,358**	**0**	**100,387**	**125,909**	**8,046**	**133,954**
1.2.1.4.7 Electrical	**1.00**	**LS**	**37,982**	**9,094**	**114,662**	**0**	**193,640**	**242,869**	**15,818**	**258,687**
1.2.1.5 25 Rockwood Park - West	**1.00**	**LS**	**280,179**	**546,271**	**140,167**	**99,600**	**1,181,106**	**1,481,379**	**98,620**	**1,580,000**
(Note: An estimated total volume of 148,000 BCY at Rockwood Park - West will be excavated and hauled to the University Drive site (130,000 BCY) and the bypass channel (18,000 BCY).)										
1.2.1.5.1 Mobilization and Demobilization	**1.00**	**LS**	**1,869**	**4,142**	**0**	**0**	**7,310**	**9,168**	**586**	**9,754**
1.2.1.5.2 Site Preparation	**1.00**	**LS**	**91,280**	**186,415**	**43,066**	**0**	**335,871**	**421,259**	**26,918**	**448,178**
			1.07	*2.12*	*0.00*	*0.67*	*4.45*	*5.59*		*5.97*
1.2.1.5.3 Excavation and Hauling	**148,000.00**	**BCY**	**158,381**	**313,397**	**0**	**99,600**	**659,230**	**826,827**	**56,794**	**883,621**
			2,414.45	*8,312.27*	*0.00*	*0.00*	*11,231.76*	*14,087.22*		*14,987.39*
1.2.1.5.4 Fill Placement and Compaction	**1.00**	**EA**	**2,414**	**8,312**	**0**	**0**	**11,232**	**14,087**	**900**	**14,987**
1.2.1.5.5 Site Restoration	**1.00**	**LS**	**26,233**	**34,004**	**97,101**	**0**	**167,463**	**210,037**	**13,421**	**223,459**
1.2.1.6 30 Riverside Oxbow/Gateway	**1.00**	**LS**	**4,279,586**	**9,510,063**	**3,842,638**	**1,774,600**	**21,879,470**	**27,441,909**	**1,773,032**	**29,214,941**
1.2.1.6.1 Riverside Oxbow	**1.00**	**LS**	**3,588,943**	**7,035,270**	**3,436,449**	**1,376,200**	**17,669,233**	**22,161,300**	**1,435,601**	**23,596,900**
(Note: An estimated total volume of 2,212,000 BCY at Riverside Oxbow will be excavated and hauled to the old wastewater treatement plant (WWTP) site (1,074,000 BCY) and the1st Street Landfill site (1,138,000 BCY). Soil will be dumped, spread, and compacted at each site.)										
1.2.1.6.1.1 Mobilization and Demobilization	**1.00**	**LS**	**3,505**	**7,758**	**0**	**0**	**13,697**	**17,179**	**1,098**	**18,276**
1.2.1.6.1.2 Site Preparation	**1.00**	**LS**	**337,584**	**1,062,424**	**19,650**	**0**	**1,524,438**	**1,911,998**	**122,177**	**2,034,174**
			1.02	*1.95*	*0.00*	*0.43*	*3.99*	*5.01*		*5.33*

Description	Quantity	UOM	LaborCost	EQCost	MatlCost	SubBidCost	CostToPrime	ContractCost	Escalation	ProjectCost
1.2.1.6.1.3 Excavation and Hauling	**2,212,000.00**	**BCY**	**2,267,133**	**4,318,571**	**0**	**946,200**	**8,827,684**	**11,071,955**	**707,498**	**11,779,453**
			0.13	*0.44*	*0.00*	*0.00*	*0.60*	*0.75*		*0.80*
1.2.1.6.1.4 Fill Placement and Compaction	**2,212,000.00**	**BCY**	**296,709**	**970,241**	**0**	**0**	**1,329,013**	**1,666,889**	**106,514**	**1,773,404**
1.2.1.6.1.5 Site Restoration	**1.00**	**LS**	**135,032**	**163,673**	**705,637**	**0**	**1,054,331**	**1,322,375**	**84,500**	**1,406,875**
1.2.1.6.1.6 Pavement, Sidewalks, Curbs, and Gutter	**1.00**	**LS**	**548,980**	**512,605**	**2,711,162**	**430,000**	**4,920,070**	**6,170,904**	**413,814**	**6,584,718**
1.2.1.6.2 Gateway	**1.00**	**LS**	**690,643**	**2,474,793**	**406,189**	**398,400**	**4,210,237**	**5,280,610**	**337,431**	**5,618,041**
(Note: An estimated total volume of 861,000 BCY at Riverside Gateway will be excavated and hauled to the Beach Street Fill site (316,000 BCY), the old wastewater treatement plant (WWTP) site (441,000 BCY) and the hydraulic embankment site (104,000 BCY). Soil will be dumped, spread, and compacted at each site.)										
1.2.1.6.2.1 Mobilization and Demobilization	**1.00**	**LS**	**5,841**	**13,090**	**0**	**0**	**23,010**	**28,860**	**1,844**	**30,705**
1.2.1.6.2.2 Site Preparation	**1.00**	**LS**	**228,617**	**733,360**	**4,650**	**0**	**1,037,187**	**1,300,872**	**83,126**	**1,383,998**
			0.29	*1.44*	*0.00*	*0.46*	*2.34*	*2.93*		*3.12*
1.2.1.6.2.3 Excavation and Hauling	**861,200.00**	**BCY**	**252,055**	**1,241,677**	**0**	**398,400**	**2,013,116**	**2,524,912**	**161,342**	**2,686,254**
			0.13	*0.43*	*0.00*	*0.00*	*0.59*	*0.75*		*0.79*
1.2.1.6.2.4 Fill Placement and Compaction	**861,200.00**	**BCY**	**115,481**	**372,583**	**0**	**0**	**512,220**	**642,442**	**41,052**	**683,494**
1.2.1.6.2.5 Site Restoration	**1.00**	**LS**	**86,176**	**113,359**	**396,884**	**0**	**615,177**	**771,574**	**49,304**	**820,878**
1.2.1.6.2.6 Drainage	**1.00**	**LS**	**2,473**	**724**	**4,655**	**0**	**9,526**	**11,948**	**763**	**12,712**
1.3 06 Fish and Wildlife Facilities	**1.00**	**LS**	**441**	**44**	**1,066**	**213,197**	**214,838**	**269,457**	**34,652**	**304,109**
(Note: Fish and wildlife facilities include costs to restore and improve the various habitats at several valley storage sites. The primary locations for ecosystem features are Rockwood Park, Ham Branch and Riverside Oxbow/Gateway. The improvements that are included are seeding (both normal Bermuda grass and grassland/wetlands) and tree plantings. Excavations included with the development of valley storage capacity include the opening of the old Sycamore Creek Oxbow and excavation of the old Riverside Oxbow. In addition, 50,000 cubic yards of earthwork is included at the Rockwood site for the restoration of an existing oxbow. Costs for Ecosystem development including Riparian Forest, Wetlands, and Grasslands were prepared by the Environmental Branch USACE Fort Worth District.)										
1.3.1 15 Ham Branch	**1.00**	**LS**	**441**	**44**	**1,066**	**213,197**	**214,838**	**269,457**	**34,652**	**304,109**

Description	Quantity	UOM	LaborCost	EQCost	MatlCost	SubBidCost	CostToPrime	ContractCost	Escalation	ProjectCost
1.4 11 Levees and Floodwalls	**1.00**	**LS**	**6,621,342**	**5,158,184**	**13,675,339**	**0**	**29,861,028**	**37,452,628**	**3,672,525**	**41,125,152**
(Note: Bypass Channel construction was been broken into two separate areas; North and South. The channel will consist of an excavated center channel with a new earthen levee constructed on the west side of the channel and multi-level reinforced concrete floodwalls on the east side. Both sides of the channel will have recreational paths for pedestrian access. All excess excavation material will be stockpiled in the future development area for use during construction of the flood control gates, backfill behind the retaining walls and White Settlement roadway embankment. Two pedestrian crossings will be constructed across the new channel and the West Fork Trinity River (just prior to the intersection with the new channel). Both pedestrian crossings will be designed to act as water breaks during a flood event.)										
1.4.1 Bypass Channel - North	**1.00**	**LS**	**3,024,394**	**2,501,552**	**5,983,308**	**0**	**13,507,391**	**16,941,389**	**1,639,152**	**18,580,541**
1.4.1.1 Mobilization and Demobilization	**1.00**	**LS**	**5,140**	**11,373**	**0**	**0**	**20,083**	**25,189**	**1,657**	**26,846**
1.4.1.2 Site Preparation	**1.00**	**LS**	**188**	**22**	**465**	**0**	**714**	**896**	**59**	**955**
1.4.1.3 Excavation, Hauling, and Placement	**1.00**	**LS**	**824,764**	**2,171,978**	**1,767,509**	**0**	**5,310,609**	**6,660,730**	**423,829**	**7,084,559**
(Note: The valley fill is the portion of levees and berms around the Valley Storage sites. The levee fill is located adjacent to the Bypass Channels to adjust the channel walls for flood conditions. The retaining wall fill is estimated in the earthwork portion. The gate fill is located at one of the three gates. The remainder of fill is assumed to be used as fill for road projects. Fill volumes were determined in bank cubic yard (BCY), loose cubic yard (LCY), and embankment cubic yard (ECY) units of measure. A bulking factor of 1.2 was assumed for converting BCY to LCY. A compaction factor of 0.9 was assumed for converting LCY to ECY.)										
1.4.1.4 Pavement, Sidewalks, Curbs, and Gutter	**1.00**	**LS**	**65,452**	**0**	**275,246**	**0**	**403,437**	**506,004**	**33,295**	**539,299**
1.4.1.5 Retaining Walls	**1.00**	**LS**	**2,098,316**	**297,683**	**3,756,570**	**0**	**7,497,917**	**9,404,120**	**1,157,647**	**10,561,767**
(Note: Lower retaining wall is approximately 4,028 feet long. The footing is 16’ wide and 1’-6” thick. The wall is 1’-2” thick and 12’ high. Middle retaining wall is approximately 4,028 feet long. The footing is 11’-6” wide and 1’-6” thick. The wall is 1’-2” thick and 11’-6” high. Upper retaining wall is approximately 3,678 feet long. The footing is between 6’-6” and 11’-3” wide and between 1’-6” and 1’-8” thick. The wall is between 1’-2” and 1’-5.5” thick and between 7’-6” and 11’-4” high.)										
			176.38	*25.84*	*325.84*	*0.00*	*642.68*	*806.06*		*905.29*
1.4.1.5.1 Lower Wall	**3,678.00**	**LF**	**648,730**	**95,025**	**1,198,453**	**0**	**2,363,762**	**2,964,703**	**364,955**	**3,329,658**
			171.95	*23.23*	*289.41*	*0.00*	*592.08*	*742.60*		*834.01*
1.4.1.5.2 Middle Wall	**4,028.00**	**LF**	**692,597**	**93,575**	**1,165,735**	**0**	**2,384,881**	**2,991,192**	**368,216**	**3,359,407**
			187.93	*27.08*	*345.68*	*0.00*	*682.54*	*856.06*		*961.45*
1.4.1.5.3 Upper Wall	**4,028.00**	**LF**	**756,989**	**109,083**	**1,392,381**	**0**	**2,749,274**	**3,448,225**	**424,477**	**3,872,702**
1.4.1.6 Site Restoration	**1.00**	**LS**	**30,534**	**20,496**	**183,518**	**0**	**274,631**	**344,451**	**22,665**	**367,116**
1.4.2 Bypass Channel - South	**1.00**	**LS**	**3,596,949**	**2,656,631**	**7,692,031**	**0**	**16,353,637**	**20,511,239**	**2,033,372**	**22,544,611**

Description	Quantity	UOM	LaborCost	EQCost	MatlCost	SubBidCost	CostToPrime	ContractCost	Escalation	ProjectCost
1.4.2.1 Mobilization and Demobilization	**1.00**	**LS**	**5,374**	**11,900**	**0**	**0**	**21,007**	**26,347**	**1,734**	**28,081**
1.4.2.2 Site Preparation	**1.00**	**LS**	**188**	**22**	**465**	**0**	**714**	**896**	**59**	**955**
1.4.2.3 Excavation, Hauling, and Placement	**1.00**	**LS**	**777,352**	**2,252,182**	**2,308,663**	**0**	**5,890,762**	**7,388,377**	**486,155**	**7,874,532**
(Note: The valley fill is the portion of levees and berms around the Valley Storage sites. The levee fill is located adjacent to the Bypass Channels to adjust the channel walls for flood conditions. The retaining wall fill is estimated in the earthwork portion. The gate fill is located at one of the three gates. The remainder of fill is assumed to be used as fill for road projects. Fill volumes were determined in bank cubic yard (BCY), loose cubic yard (LCY), and embankment cubic yard (ECY) units of measure. A bulking factor of 1.2 was assumed for converting BCY to LCY. A compaction factor of 0.9 was assumed for converting LCY to ECY.)										
1.4.2.4 Pavement, Sidewalks, Curbs, and Gutter	**1.00**	**LS**	**86,620**	**0**	**364,267**	**0**	**533,918**	**669,657**	**44,063**	**713,720**
1.4.2.5 Retaining Walls	**1.00**	**LS**	**2,684,588**	**365,654**	**4,752,125**	**0**	**9,513,805**	**11,932,509**	**1,468,892**	**13,401,401**
(Note: Lower retaining wall is approximately 4,200 feet long. The footing is 16’ wide and 1’-6” thick. The wall is 1’-2” thick and 12’ high. Middle retaining wall is approximately 4,150 feet long. The footing is 11’-6” wide and 1’-6” thick. The wall is 1’-2” thick and 11’-6” high. Upper retaining wall is approximately 4,150 feet long. The footing is between 11’-3” and 16’ wide and between 1’-8” and 1’-10” thick. The wall is between 1’-5.5” and 1’-9” thick and between 11’-4” and 15’-2” high.)										
			244.99	*37.50*	*490.31*	*0.00*	*937.52*	*1,175.86*		*1,320.61*
1.4.2.5.1 Lower Wall	**4,150.00**	**LF**	**1,016,708**	**155,625**	**2,034,776**	**0**	**3,890,692**	**4,879,827**	**600,707**	**5,480,533**
			211.85	*23.23*	*305.42*	*0.00*	*664.99*	*834.05*		*936.72*
1.4.2.5.2 Middle Wall	**4,150.00**	**LF**	**879,185**	**96,407**	**1,267,499**	**0**	**2,759,689**	**3,461,288**	**426,084**	**3,887,372**
			187.78	*27.05*	*345.20*	*0.00*	*681.77*	*855.09*		*960.36*
1.4.2.5.3 Upper Wall	**4,200.00**	**LF**	**788,695**	**113,623**	**1,449,851**	**0**	**2,863,424**	**3,591,395**	**442,101**	**4,033,496**
1.4.2.6 Site Restoration	**1.00**	**LS**	**42,826**	**26,873**	**266,512**	**0**	**393,431**	**493,453**	**32,469**	**525,923**
1.5 15 Flood Control and Diversion Structures	**1.00**	**LS**	**3,144,870**	**763,499**	**2,980,628**	**8,431,440**	**17,259,136**	**21,646,944**	**3,048,962**	**24,695,906**
(Note: Three (3) gate control structures (Clear Fork, Trinity Point and TRWD) will be constructed for the project. All three (3) structures will be constructed of concrete with battered foundation piles providing support to bedrock. The Clear Fork gate will also have a sheet pile cutoff wall. Each gate will have one large (24 feet x 17 feet) vertical roller gate and at least one small (12 feet x 10 feet) vertical roller gate (Trinity Point Gate - two). The large gate will be used for normal water control and boat access to the interior area, while the smaller gate(s) will be used to seal off pedestrian access during flooding conditions. Gates can be inspected when open through internal access areas. In addition, each gate will have an enclosed control room and instrumentation system for monitoring the gates. Budgetary information on gate construction and installation costs was provided by General Electric Hydro.)										
1.5.1 05 Clear Fork	**1.00**	**LS**	**1,293,742**	**380,809**	**1,324,103**	**4,295,720**	**8,219,509**	**10,309,163**	**1,465,747**	**11,774,910**

Description	Quantity	UOM	LaborCost	EQCost	MatlCost	SubBidCost	CostToPrime	ContractCost	Escalation	ProjectCost
1.5.1.1 Mobilization and Demobilization	1.00	LS	6,608	9,298	0	0	18,526	23,236	1,643	24,878
1.5.1.2 Site Preparation	1.00	LS	32,403	47,106	22,795	0	105,319	132,095	9,339	141,434
1.5.1.3 Excavation, Hauling, and Placement	1.00	LS	104,479	235,936	423,001	0	782,057	980,880	71,167	1,052,047
(Note: Embankment road....)										
1.5.1.4 Pavement, Sidewalks, Curbs and Gutter	1.00	LS	103	163	7,920	0	9,358	11,737	830	12,567
1.5.1.5 Training Walls	1.00	LS	1,142,975	84,860	835,304	0	2,352,411	2,950,467	379,725	3,330,192
1.5.1.6 Mechanical	1.00	LS	1,837	154	10,511	0	14,703	18,441	1,304	19,745
1.5.1.7 Finishes	1.00	LS	0	0	0	1,110,000	1,265,633	1,587,396	204,298	1,791,694
1.5.1.8 Flood Control Structures	1.00	LS	147	115	0	2,830,720	3,227,949	4,048,593	728,665	4,777,258
1.5.1.9 Electrical, Controls, and Instrumentation	1.00	LS	13	0	37	355,000	404,833	507,755	65,344	573,098
1.5.1.10 Site Restoration	1.00	LS	5,176	3,177	24,536	0	38,719	48,563	3,433	51,996
1.5.2 15 TRWD	1.00	LS	1,851,128	382,690	1,656,525	4,135,720	9,039,627	11,337,781	1,583,215	12,920,995
1.5.2.1 Mobilization and Demobilization	1.00	LS	6,608	9,298	0	0	18,526	23,236	1,643	24,878
1.5.2.2 Site Preparation	1.00	LS	52,403	62,106	27,795	0	150,928	189,298	13,383	202,682
1.5.2.3 Excavation, Hauling, and Placement	1.00	LS	139,314	237,229	538,361	0	940,591	1,179,718	85,225	1,264,943
1.5.2.4 Pavement, Sidewalks, Curbs and Gutter	1.00	LS	103	163	7,920	0	9,358	11,737	830	12,567
1.5.2.5 Training Walls	1.00	LS	1,645,400	70,440	1,046,743	0	3,149,924	3,950,733	508,459	4,459,192
1.5.2.6 Mechanical	1.00	LS	1,964	163	11,134	0	15,599	19,565	1,383	20,948
1.5.2.7 Finishes	1.00	LS	0	0	0	1,110,000	1,265,633	1,587,396	204,298	1,791,694
1.5.2.8 Flood Control Structures	1.00	LS	147	115	0	2,830,720	3,227,949	4,048,593	728,665	4,777,258

Description	Quantity	UOM	LaborCost	EQCost	MatlCost	SubBidCost	CostToPrime	ContractCost	Escalation	ProjectCost
1.5.2.9 Electrical, Controls, and Instrumentation	**1.00**	**LS**	**13**	**0**	**37**	**195,000**	**222,400**	**278,941**	**35,895**	**314,836**
1.5.2.10 Site Restoration	**1.00**	**LS**	**5,176**	**3,177**	**24,536**	**0**	**38,719**	**48,563**	**3,433**	**51,996**
1.6 18 Cultural Resource Preservation	**1.00**	**LS**	**0**	**0**	**0**	**1,020,000**	**0**	**1,020,000**	**88,740**	**1,108,740**
(Note: These costs were determined by USACE in accordance with the requirements contained in the Programmatic Agreement between the USACE and Texas Historical Commission.)										
1.7 30 Planning, Engineering, and Design	**1.00**	**LS**	**0**	**0**	**0**	**11,345,131**	**0**	**11,345,131**	**0**	**11,345,131**
(Note: This category includes anticipated costs for design and permitting including but not limited to development of planning, engineering and design, independent technical review (ITR), cost estimation, value engineering (VE), contract bid packages, engineering services during construction, planning during construction, environmental permitting, and permit fees. The costs are divided into three main tasks: 1) A/E Design Fees; 2) Permits, Fees, and Licenses; 3) Survey and Testing; and 4) Legal Costs. Costs under this category are based on a percentage of the total construction cost with contingency. Based on the complexity, magnitude, and duration of the project the costs have been assumed as approximately 5.0% for A/E Design Fees and 1.7% for Permits, Fees and Licenses for a total of 6.7% for this category.)										
1.8 31 Construction Management	**1.00**	**LS**	**0**	**0**	**0**	**6,077,749**	**0**	**6,077,749**	**0**	**6,077,749**
(Note: Construction management includes, but is not limited to, costs for: meetings (pre-construction, progress, post-con), field coordination, inspection, survey control, contract modifications, payment request processing. Costs under this category are based on a percentage of the total construction cost with contingency. Based on the complexity, magnitude, and duration of the project the costs have been assumed as approximately 4.6% for this category.)										
2 02 Non-Federal	**1.00**	**LS**	**18,643,100**	**10,867,688**	**24,372,638**	**222,401,216**	**153,573,434**	**325,012,097**	**22,622,613**	**347,634,710**
(Note: The non-federal sponsor is the Tarrant Regional Water District (TRWD) and the City of Fort Worth is one of the local partners. These entities are also sponsors for the Riverside Oxbow Ecosystem Restoration Project.)										
2.1 01 Lands and Damages	**1.00**	**LS**	**0**	**0**	**0**	**53,111,628**	**0**	**53,111,628**	**0**	**53,111,628**

Description	Quantity	UOM	LaborCost	EQCost	MatlCost	SubBidCost	CostToPrime	ContractCost	Escalation	ProjectCost
(Note: This category includes costs associated with the acquisition of property for the project. The costs were tabulated by the major work element for which it will be acquired and property acquisition assistance costs. The four (4) major work elements are: bypass channel, water feature, valley storage (Riverside/Gateway and Marine Creek. The costs associated with each element of work were determined after review of the mass appraisals performed by James K. Norwood, Certified Real Estate Appraiser. Appraisals were performed on the Central City Project on behalf of the Tarrant Regional Water District and at the Riverside Oxbow/Gateway on behalf of the USACE. Estimated costs in this estimate are based on the best known information at the time of the estimate and may vary from the amounts in the Norwood appraisals given modifications in the project footprint. Costs were normalized to the baseline 2007 by factors provided by the Real Estate Division USACE Fort Worth District. A factor of 6% per year was used for land values and a 15% flat rate was used for administrative fees. Property acquisition assistance costs are included for consulting fees, legal assistance, and other permitting, subordinated fees, licenses that will be incurred as part of the land acquisition activity. These costs are for additional analysis, planning, acquisition documents and proceedings including any additional appraisals and possible condemnation proceedings. Base cost for these assistance cost was estimated at 13% of the Property Acquisition Cost and allocated at 5.2% Consulting, 5.2% Legal, and 2.6% Permitting & Licensing. A contingency was not been provided on these costs as they are considered separate consulting costs. Landowner relocation costs were provided by a separate independent relocation study. This category includes anticipated costs for the relocation and moving of current property owners and tenants on the affected property. Costs for relocations of persons and businesses under this section are based on the report prepared by Pinnacle Consulting Management Group, Inc dated February 2, 2005. Costs were adjusted to baseline 2007 cost utilizing factors provided by Pinnacle Group of 4% compounded annually. A uniform contingency of 10% was included on the Landowner Relocation costs to account for market fluctuations.)										
2.1.1 05 Property Acquistion Assistance	**1.00**	**LS**	**0**	**0**	**0**	**7,239,991**	**0**	**7,239,991**	**0**	**7,239,991**
2.1.2 10 Property Acquisition	**1.00**	**LS**	**0**	**0**	**0**	**28,406,743**	**0**	**28,406,743**	**0**	**28,406,743**
2.1.3 15 Property Relocations	**1.00**	**LS**	**0**	**0**	**0**	**17,464,894**	**0**	**17,464,894**	**0**	**17,464,894**
2.2 02 Relocations	**1.00**	**LS**	**3,290,320**	**5,280,826**	**2,103,693**	**10,553,410**	**21,735,374**	**30,177,032**	**2,710,958**	**32,887,990**
(Note: Utility relocations are required for the construction of the project. A variety of utility lines including sewers, storm sewers, water mains, gas mains, electrical and cable will need to be relocated and/or demolished. Existing utilities were contacted, maps obtained and impacted utilities identified. City and franchise utility owners were contacted regarding location and costs for major relocations. Cost for the relocation of the 138 kilovolt (kV) transmission line provided by TXU Electric. Construction Costs for these items have been included in this section. A contingency of 20% was included on these costs. This section also includes the demolition of structures and paving in the bypass channel and the water feature areas. Approximately 1,583,575 square feet of light industrial buildings will be demolished. The average building height was assumed to be 20 feet tall with 7.5% of building volume requiring disposal. Concrete paving was assumed to be 8-inch thick with approximately 48,780 square yards required for removal. Asphalt paving was assumed to be 6-inch thick with approximately 127,800 square yards of material removal. It is the intent of the local sponsors to develop a recycling and reuse plan to reduce landfill waste. Concrete debris may be used as armor in non-visible areas or crushed and used as fill during site construction. Demolition debris that cannot be recycled or reused beneficially will be hauled to the City of Fort Worth construction debris landfill on Bennen Avenue or the TRWD disposal area. There will be no disposal fees associated with construction debris disposed at either facility.)										
2.2.1 05 Mobilization and Demobilization	**1.00**	**LS**	**2,912**	**4,623**	**0**	**0**	**8,157**	**10,230**	**0**	**10,230**
2.2.2 10 General Demolition and Site Preparation	**1.00**	**LS**	**2,063,564**	**4,447,424**	**51,100**	**0**	**6,950,331**	**9,650,074**	**643,855**	**10,293,929**

Description	Quantity	UOM	LaborCost	EQCost	MatlCost	SubBidCost	CostToPrime	ContractCost	Escalation	ProjectCost
2.2.3 15 Utility Relocation - Sanitary Sewer, Potable Water, Storm Sewer and Natural Gas	1.00	LS	591,770	634,611	1,307,528	4,264,230	6,856,579	9,519,905	924,122	10,444,027
2.2.3.1 Sanitary Sewer	1.00	LS	199,496	227,976	157,985	3,303,840	3,905,888	5,423,067	574,562	5,997,629
2.2.3.1.1 Site Work	1.00	LS	117,642	197,992	50,000	0	379,787	527,310	41,749	569,059
2.2.3.1.2 Piping and Appurtenances	1.00	LS	81,854	29,985	107,985	3,303,840	3,526,101	4,895,757	532,813	5,428,570
2.2.3.2 Potable Water	1.00	LS	75,093	93,040	42,500	331,740	548,145	761,063	77,033	838,097
2.2.3.2.1 Site Work	1.00	LS	62,593	88,040	35,000	0	191,405	265,753	22,599	288,352
2.2.3.2.2 Piping and Appurtenances	1.00	LS	12,500	5,000	7,500	331,740	356,740	495,310	54,435	549,744
2.2.3.3 Storm Sewer	1.00	LS	184,197	213,464	1,042,043	0	1,470,450	2,041,622	136,400	2,178,022
2.2.3.3.1 Site Work	1.00	LS	70,237	117,932	30,000	0	226,590	314,606	24,936	339,541
2.2.3.3.2 Outfall Collection System	1.00	LS	4,506	1,492	32,950	0	39,872	55,359	3,549	58,908
2.2.3.3.3 Piping and Appurtenances	1.00	LS	109,455	94,040	979,093	0	1,203,987	1,671,657	107,916	1,779,573
2.2.3.4 Natural Gas Distribution and Transmission	1.00	LS	72,984	85,132	40,000	628,650	832,096	1,155,310	120,867	1,276,177
2.2.3.4.1 Site Work	1.00	LS	50,484	77,632	25,000	0	158,446	219,991	18,076	238,067
2.2.3.4.2 Piping and Appurtenances	1.00	LS	22,500	7,500	15,000	628,650	673,650	935,318	102,791	1,038,110
2.2.3.5 Equipment	1.00	LS	60,000	15,000	25,000	0	100,000	138,843	15,259	154,102
2.2.4 20 Utility Relocation - Electrical and Communication	1.00	LS	625,510	188,473	745,064	289,180	1,906,690	2,647,312	226,236	2,873,548
2.2.4.1 Site Work	1.00	LS	205,530	73,634	134,000	101,680	537,289	745,990	54,284	800,274
2.2.4.2 Electrical	1.00	LS	419,980	114,839	611,064	187,500	1,369,401	1,901,322	171,952	2,073,274
2.2.4.2.1 Electrical Distribution	1.00	LS	94,573	11,528	242,627	187,500	556,396	772,519	61,442	833,961
2.2.4.2.2 Cable TV	1.00	LS	5,138	2,202	6,263	0	14,675	20,376	1,306	21,682

Description	Quantity	UOM	LaborCost	EQCost	MatlCost	SubBidCost	CostToPrime	ContractCost	Escalation	ProjectCost
2.2.4.2.3 Fiber Optic	1.00	LS	7,335	1,109	10,175	0	20,181	28,020	1,796	29,816
2.2.4.2.4 Telephone	1.00	LS	62,933	0	102,000	0	178,149	247,347	15,855	263,202
2.2.4.2.5 Miscellaneous	1.00	LS	250,000	100,000	250,000	0	600,000	833,060	91,553	924,614
2.2.5 25 Utility Relocation - Transmission Lines	1.00	LS	6,564	5,694	0	6,000,000	6,013,617	8,349,509	916,745	9,266,254
2.2.5.1 Site Work	1.00	LS	6,564	5,694	0	0	13,617	18,907	1,212	20,119
2.2.5.2 Electrical	1.00	LS	0	0	0	6,000,000	6,000,000	8,330,602	915,533	9,246,135
2.3 04 Dams	1.00	LS	7,302,513	2,413,522	7,008,219	13,043,000	30,135,365	37,796,708	4,442,392	42,239,100

(Note: Downstream of the bypass channel a new dam structure will be constructed on the West Fork Trinity River. The dam will consist of seven (7) leaf gates placed into a concrete support structure. Three (3) sluice gates will also be provided in the bottom of the dam to assist in the control of upstream water levels. The concrete structure will have a maintenance access bridge to provide maintenance access to the leaf gates on the top of the dam and will be supported on a series of drilled shafts anchored in a bedrock foundation. A sheet piling system is proposed as a positive cut-off for seepage and as part of the construction sequencing plan. A low water fixed broad crest weir dam is proposed on Marine Creek in near proximity to the Samuels Avenue Dam. The dam will be constructed of roller compacted concrete with a cast-in-place concrete cap on all portions above the stilling basin. Driven sheet piling will be used for seepage cut-off. A small lock structure for pleasure boats is proposed for connectivity between the Marine Creek and Samuels Dam impoundments. The lock will be a reinforced concrete structure with miter gates.)

2.3.1 05 Samuels Avenue Dam	1.00	LS	4,877,804	1,776,020	4,231,597	10,907,000	22,070,242	27,681,182	3,268,232	30,949,414
2.3.1.1 Mobilization and Demobilization	1.00	LS	5,015	9,223	0	0	15,309	19,201	1,329	20,530
2.3.1.2 Site Preparation	1.00	LS	1,200,852	1,072,646	483,770	0	2,993,371	3,754,379	272,082	4,026,462
2.3.1.3 Earthwork	1.00	LS	183,089	347,066	20,864	100,000	690,189	865,656	67,178	932,834
2.3.1.4 Pavement, Sidewalks, Curbs and Gutter	1.00	LS	0	0	0	40,000	40,000	50,169	6,382	56,551
2.3.1.5 Retaining Walls	1.00	LS	3,481,750	343,400	3,693,963	792,000	8,311,113	10,424,055	1,325,940	11,749,995
2.3.1.6 Finishes	1.00	LS	0	0	0	350,000	350,000	438,981	55,838	494,819
2.3.1.7 Flood Control Structures	1.00	LS	0	0	0	8,330,000	8,330,000	10,447,744	1,328,953	11,776,697
2.3.1.8 Buildings	1.00	LS	0	0	0	1,045,000	1,045,000	1,310,671	166,717	1,477,389
2.3.1.9 Electrical	1.00	LS	7,098	3,685	33,000	250,000	295,261	370,325	43,813	414,138

Description	Quantity	UOM	LaborCost	EQCost	MatlCost	SubBidCost	CostToPrime	ContractCost	Escalation	ProjectCost
2.3.2 10 Marine Creek Low Water Dam/Lock	1.00	LS	2,424,709	637,502	2,776,623	2,136,000	8,065,122	10,115,526	1,174,160	11,289,686
2.3.2.1 Mobilization and Demobilization	1.00	LS	4,143	8,089	0	0	13,118	16,453	0	16,453
2.3.2.2 Site Preparation	1.00	LS	394,830	363,525	127,585	0	966,482	1,212,192	84,049	1,296,241
2.3.2.3 Earthwork	1.00	LS	14,970	29,596	20,800	0	68,546	85,972	3,675	89,647
2.3.2.4 Retaining Walls	1.00	LS	2,010,767	236,292	2,463,238	756,000	5,471,977	6,863,123	839,949	7,703,072
2.3.2.5 Flood Control Structures	1.00	LS	0	0	165,000	1,300,000	1,465,000	1,837,448	233,723	2,071,172
2.3.2.6 Electrical	1.00	LS	0	0	0	80,000	80,000	100,338	12,763	113,102
2.4 06 Fish and Wildlife Facilities	1.00	LS	126,422	202,581	142,103	6,416,460	6,942,391	9,638,017	1,197,229	10,835,246
(Note: Fish and wildlife facilities include costs to restore and improve the various habitats at several valley storage sites. The primary locations for ecosystem features are Rockwood Park, Ham Branch and Riverside Oxbow/Gateway. The improvements that are included are seeding (both normal Bermuda grass and grassland/wetlands) and tree plantings. Excavations included with the development of valley storage capacity include the opening of the old Sycamore Creek Oxbow and excavation of the old Riverside Oxbow. In addition, 50,000 cubic yards of earthwork is included at the Rockwood site for the restoration of an existing oxbow. Costs for Ecosystem development including Riparian Forest, Wetlands, and Grasslands were prepared by the Environmental Branch USACE Fort Worth District.)										
2.4.1 10 Riverside Oxbow/Gateway	1.00	LS	23,330	46,955	465	6,416,460	6,492,180	9,013,445	1,153,072	10,166,517
2.4.1.1 Mobilization and Demobilization	1.00	LS	1,168	2,425	0	0	3,844	4,821	341	5,162
2.4.1.2 Earthwork	1.00	LS	22,162	44,530	465	6,416,460	6,488,336	9,008,625	1,152,731	10,161,355
2.4.2 05 Rockwood Park	1.00	LS	103,092	155,626	141,638	0	450,211	624,572	44,157	668,729
2.4.2.1 Mobilization and Demobilization	1.00	LS	1,168	2,425	0	0	3,844	4,821	341	5,162
2.4.2.2 Earthwork	1.00	LS	68,374	134,480	465	0	217,927	302,578	21,392	323,970
2.4.2.3 Site Restoration	1.00	LS	33,550	18,721	141,173	0	228,440	317,174	22,424	339,598
2.5 08 Roads, Railroads and Bridges	1.00	LS	3,317,297	925,266	8,548,320	38,065,665	50,983,881	63,945,564	6,634,002	70,579,566

Description	Quantity	UOM	LaborCost	EQCost	MatlCost	SubBidCost	CostToPrime	ContractCost	Escalation	ProjectCost
(Note: A. Henderson Bridge and Roadway Henderson Bridge will be a 6 lane standard bridge approximately 700 feet long with 10 feet wide concrete walks on both sides. Elevated embankments will lead up to the bridge on both sides of the future channel. The embankments will be supported by concrete retaining walls. The roadways will be constructed of concrete and include street lighting, pavement marking and signage. Construction of the roadway will require a temporary roadway detour. B. White Settlement Bridge and Roadway White Settlement Bridge will be a 4 lane standard bridge approximately 735 feet long with 10 feet wide concrete walks on both sides. Elevated embankments will lead up to the bridge on both sides of the future channel. The embankments will be supported by concrete retaining walls. The roadways will be constructed of concrete and include street lighting, pavement marking and signage. Construction of the roadway will require a temporary roadway. Installation of the final traffic signal for the White Settlement and Henderson Street intersection are included under this task. C. Main Street Bridge and Roadway Main Street Bridge will be a 4 lane designer (cable stayed) bridge approximately 406 feet long with 10 feet wide concrete walks on both sides. Elevated embankments will lead up to the bridge on both sides of the future channel. The embankments will be supported by concrete retaining walls. The roadways will be constructed of concrete. The roadways will be constructed of concrete and include street lighting, pavement marking and signage. Construction of the roadway will require a roadway detour onto an existing roadway. D. White Settlement at Water Feature Bridge and Roadway The White Settlement Bridge will be a 4 lane standard bridge approximately 450 feet long with 10 feet wide concrete walks on both sides. The bridge will cross the expanded Water Feature Elevated embankments will lead up to the bridge on both sides of the future channel. The embankments will be supported by concrete retaining walls. The roadways will be constructed of concrete. The roadways will be constructed of concrete and include street lighting, pavement marking and signage. E. Beech Street Bridge The existing Beech Street Bridge will be replaced with a 4 lane standard bridge approximately 115 feet long supported on drilled shafts. Elevated embankments will lead up to the bridge on both sides of the existing old oxbow channel. The interior embankments will be lined with concrete slope protection. The roadways will be constructed of concrete and pavement markings and signage. F. Park Roads and Bridge Costs are provided for over 4950 feet of two lane park entrance and roadways, 48,060 square feet of parking and one two lane park road bridge 103 ft in length. G. Other Street Modifications Additional costs were provided to perform modifications to the various local streets that will be affected by the construction of the channel. These modifications include providing turnouts, dead ends and patching of existing roads and drainage system.)										
2.5.1 05 Henderson Bridge and Roadway	**1.00**	**LS**	**637,909**	**268,998**	**2,006,716**	**11,067,500**	**14,011,776**	**17,574,003**	**1,824,450**	**19,398,453**
2.5.1.1 Mobilization and Demobilization	**1.00**	**LS**	**2,912**	**4,623**	**0**	**0**	**8,157**	**10,230**	**656**	**10,886**
2.5.1.2 Earthwork	**1.00**	**LS**	**67,242**	**146,727**	**465**	**0**	**228,471**	**286,555**	**18,368**	**304,923**
2.5.1.3 Pavement, Sidewalks, Curbs, and Gutter	**1.00**	**LS**	**77,755**	**65,648**	**1,465,501**	**65,000**	**1,689,898**	**2,119,523**	**139,595**	**2,259,118**
2.5.1.4 Drainage	**1.00**	**LS**	**0**	**0**	**0**	**502,500**	**502,500**	**630,251**	**69,265**	**699,516**
2.5.1.5 Bridges	**1.00**	**LS**	**490,000**	**52,000**	**540,750**	**10,500,000**	**11,582,750**	**14,527,444**	**1,596,566**	**16,124,010**
2.5.2 10 White Settlement Bridge and Roadway	**1.00**	**LS**	**549,440**	**178,411**	**1,099,061**	**8,831,500**	**10,674,760**	**13,388,615**	**1,425,225**	**14,813,840**
2.5.2.1 Mobilization and Demobilization	**1.00**	**LS**	**2,912**	**4,623**	**0**	**0**	**8,157**	**10,230**	**656**	**10,886**
2.5.2.2 Earthwork	**1.00**	**LS**	**37,699**	**95,798**	**465**	**0**	**141,837**	**177,896**	**11,403**	**189,299**

Description	Quantity	UOM	LaborCost	EQCost	MatlCost	SubBidCost	CostToPrime	ContractCost	Escalation	ProjectCost
2.5.2.3 Pavement, Sidewalks, Curbs, and Gutter	1.00	LS	38,454	28,090	579,602	152,500	806,498	1,011,535	73,600	1,085,134
2.5.2.4 Drainage	1.00	LS	0	0	0	300,000	300,000	376,269	41,352	417,621
2.5.2.5 Bridges	1.00	LS	470,375	49,900	518,994	8,379,000	9,418,269	11,812,685	1,298,214	13,110,899
2.5.3 15 Main Street Bridge and Roadway	1.00	LS	492,566	86,428	974,435	12,537,400	14,099,043	17,683,456	1,911,135	19,594,591
2.5.3.1 Mobilization and Demobilization	1.00	LS	2,912	4,623	0	0	8,157	10,230	656	10,886
2.5.3.2 Earthwork	1.00	LS	3,822	10,572	465	0	15,655	19,636	1,259	20,894
2.5.3.3 Pavement, Sidewalks, Curbs, and Gutter	1.00	LS	33,332	23,233	474,720	45,000	583,080	731,318	49,462	780,780
2.5.3.4 Drainage	1.00	LS	0	0	0	150,000	150,000	188,135	20,676	208,811
2.5.3.5 Bridges	1.00	LS	452,500	48,000	499,250	12,342,400	13,342,150	16,734,138	1,839,082	18,573,220
2.5.4 20 White Settlement Extension Bridge and Roadway	1.00	LS	173,358	58,217	705,118	2,458,900	3,409,784	4,276,657	428,548	4,705,204
2.5.4.1 Mobilization and Demobilization	1.00	LS	2,912	4,623	0	0	8,157	10,230	656	10,886
2.5.4.2 Earthwork	1.00	LS	3,776	10,509	465	0	15,537	19,487	1,249	20,736
2.5.4.3 Pavement, Sidewalks, Curbs, and Gutter	1.00	LS	52,520	28,619	563,287	0	655,070	821,609	52,665	874,274
2.5.4.4 Drainage	1.00	LS	10,400	3,467	26,928	250,000	292,933	367,406	37,912	405,318
2.5.4.5 Bridges	1.00	LS	103,750	11,000	114,438	2,208,900	2,438,088	3,057,925	336,066	3,393,991
2.5.5 25 Other Street Modifications	1.00	LS	24,639	24,754	358,627	1,645,000	2,058,055	2,581,277	259,955	2,841,232
2.5.5.1 Mobilization and Demobilization	1.00	LS	935	1,968	0	0	3,102	3,891	249	4,141
2.5.5.2 Pavement, Sidewalks, Curbs, and Gutter	1.00	LS	23,705	22,786	358,627	1,005,000	1,414,953	1,774,678	171,488	1,946,166
2.5.5.3 Drainage	1.00	LS	0	0	0	90,000	90,000	112,881	12,406	125,286
2.5.5.4 Electrical	1.00	LS	0	0	0	550,000	550,000	689,827	75,812	765,639

Description	Quantity	UOM	LaborCost	EQCost	MatlCost	SubBidCost	CostToPrime	ContractCost	Escalation	ProjectCost
2.5.6 30 Riverside Oxbow Park	**1.00**	**LS**	**1,385,433**	**271,548**	**2,604,700**	**25,365**	**4,328,895**	**5,429,435**	**505,448**	**5,934,883**
2.5.6.1 Mobilization and Demobilization	**1.00**	**LS**	**2,912**	**4,623**	**0**	**0**	**8,157**	**10,230**	**656**	**10,886**
2.5.6.2 Site Preparation	**1.00**	**LS**	**87,019**	**78,592**	**0**	**0**	**183,591**	**230,265**	**14,760**	**245,025**
2.5.6.3 Pavement, Sidewalks, Curbs, and Gutter	**1.00**	**LS**	**74,651**	**49,303**	**904,767**	**0**	**1,043,869**	**1,309,253**	**83,923**	**1,393,176**
2.5.6.4 Bridges	**1.00**	**LS**	**1,220,850**	**139,030**	**1,699,934**	**25,365**	**3,093,279**	**3,879,686**	**406,109**	**4,285,795**
2.5.6.4.1 Park Road Bridge	**1.00**	**LS**	**112,069**	**29,097**	**292,991**	**16,665**	**455,883**	**571,783**	**49,956**	**621,739**
2.5.6.4.2 Beach Street Bridge	**1.00**	**LS**	**1,108,782**	**109,934**	**1,406,943**	**8,700**	**2,637,395**	**3,307,903**	**356,153**	**3,664,056**
2.5.7 35 Riverside Gateway Park	**1.00**	**LS**	**51,975**	**34,255**	**799,664**	**0**	**896,513**	**1,124,435**	**72,076**	**1,196,511**
2.5.7.1 Mobilization and Demobilization	**1.00**	**LS**	**935**	**1,968**	**0**	**0**	**3,102**	**3,891**	**249**	**4,141**
2.5.7.2 Pavement, Sidewalks, Curbs, and Gutter	**1.00**	**LS**	**51,041**	**32,287**	**799,664**	**0**	**893,411**	**1,120,544**	**71,827**	**1,192,371**
2.5.8 40 Bypass Channel Pedesterian Bridges	**1.00**	**LS**	**1,978**	**2,655**	**0**	**1,500,000**	**1,505,054**	**1,887,686**	**207,166**	**2,094,852**
2.5.8.1 Mobilization and Demobilization	**1.00**	**LS**	**1,978**	**2,655**	**0**	**0**	**5,054**	**6,339**	**406**	**6,746**
2.5.8.2 Bridges	**1.00**	**LS**	**0**	**0**	**0**	**1,500,000**	**1,500,000**	**1,881,347**	**206,760**	**2,088,106**
2.6 13 Pumping Plants	**1.00**	**LS**	**686,415**	**193,800**	**1,670,561**	**705,000**	**3,558,204**	**4,939,462**	**683,260**	**5,622,722**
(Note: A Stormwater Pumping Facility will be included in the project to maintain the water level inside the water feature area during high water period rainfall events on the West Fork. This facility will be located adjacent to the TRWD Gate and will be constructed at the same time as the gate structure. The facility will contain a total of four (4) 45,000 gallon per minute pumps and be constructed of a concrete wet well and a masonry building. An emergency generator will be shared with the TRWD gate structure. In addition, access and parking will be provided adjacent to the site.)										
2.6.1 05 Stormwater Pumping Facility	**1.00**	**LS**	**686,415**	**193,800**	**1,670,561**	**705,000**	**3,558,204**	**4,939,462**	**683,260**	**5,622,722**
2.6.1.1 Mobilization and Demobilization	**1.00**	**LS**	**2,445**	**3,502**	**0**	**0**	**6,468**	**8,112**	**706**	**8,818**
2.6.1.2 Earthwork	**1.00**	**LS**	**71,923**	**83,355**	**39,395**	**0**	**209,794**	**291,285**	**25,342**	**316,627**

Description	Quantity	UOM	LaborCost	EQCost	MatlCost	SubBidCost	CostToPrime	ContractCost	Escalation	ProjectCost
2.6.1.3 Buildings	1.00	LS	188,765	56,574	1,043,727	645,000	2,061,086	2,861,681	403,796	3,265,476
2.6.1.3.1 Masonary	1.00	LS	6,587	154	7,075	0	17,305	24,027	2,090	26,117
2.6.1.3.2 Metals	1.00	LS	75,871	8,029	77,511	0	202,542	281,216	24,466	305,681
2.6.1.3.3 Thermal and Moisture	1.00	LS	797	28	18,241	0	21,931	30,450	2,649	33,100
2.6.1.3.4 Finishes	1.00	LS	0	0	20,000	0	22,804	31,662	4,733	36,396
2.6.1.3.5 Equipment	1.00	LS	105,508	48,363	920,900	100,000	1,175,089	1,631,533	240,869	1,872,402
2.6.1.3.6 Electrical, Controls, and Instrumentation	1.00	LS	0	0	0	545,000	621,414	862,793	128,988	991,780
2.6.1.4 Concrete Footings, Slabs, and Retaining Walls	1.00	LS	409,325	40,460	429,384	0	1,002,437	1,391,817	208,077	1,599,894
2.6.1.5 Pavement, Sidewalks, Curbs, and Gutter	1.00	LS	1,789	441	34,666	0	42,477	58,976	6,550	65,526
2.6.1.6 Drainage	1.00	LS	11,389	8,793	117,596	0	159,079	220,870	23,569	244,440
2.6.1.7 Site Restoration	1.00	LS	781	675	5,794	60,000	76,864	106,720	15,221	121,942
2.7 14 Recreation Facilities	1.00	LS	3,097,369	1,478,175	3,741,807	4,659,100	14,226,334	19,654,383	2,615,465	22,269,848

(Note: A. Valley Storage Sites For the Rockwood West, Samuels Avenue and Ham Branch Valley storage Sites the recreational facilities consist of the replacement of concrete trails. B. Water Feature A water feature will be constructed at the existing confluence of the West Fork Trinity River and the Clear Fork Trinity River. The Water Feature area will be constructed with concrete retaining walls and walks. Recirculation pumps and housings are also included in the estimate to assist in the circulation of water in the interior area. A preliminary design had not been developed at the time of the estimate. A contingency of 20% was included on these costs. C. Marine Creek Modifications will be made to Marine Creek, upstream of Samuel Avenue Dam, in order to ensure that pedestrian access will be available once the dam is constructed and the water impoundment is created. The modifications include construction of concrete retaining walls and new walks, lighting, and pedestrian bridge. A contingency of 20% was included on these costs. D. Riverside Park Costs include the reconstruction of existing parking and new entrance roads. Allowances are provided for new athletic fields lighting, or relocations depending upon the final design and park plan. E. Riverside/Gateway Park In addition to the hard and soft trail system and two pedestrian bridges a number of special construction items have been included. The design of these facilities has yet to be determined so these items are shown as standard unit cost from RS MEANS based upon approximate foot prints. These include a 1,000 square feet concession stand with restrooms, 1,500 square feet splash park, four covered basketball courts, and bleachers. Allowances for electrical service, and lighting are provided.)

2.7.1 05 Water Feature	1.00	LS	2,255,506	1,234,041	2,043,303	1,550,000	7,793,740	10,819,072	1,445,037	12,264,109
2.7.1.1 Mobilization and Demobilization	1.00	LS	4,439	9,657	0	0	15,046	18,871	1,642	20,513
2.7.1.2 Earthwork	1.00	LS	584,675	1,048,675	212,699	0	1,970,841	2,736,381	238,065	2,974,447

Description	Quantity	UOM	LaborCost	EQCost	MatlCost	SubBidCost	CostToPrime	ContractCost	Escalation	ProjectCost
2.7.1.3 Retaining Walls	1.00	LS	1,666,000	175,200	1,829,450	0	4,185,312	5,811,028	868,749	6,679,777
2.7.1.4 Mechanical	1.00	LS	0	0	0	1,050,000	1,050,000	1,457,855	217,949	1,675,805
2.7.1.5 Electrical, Controls, and Instrumentation	1.00	LS	0	0	0	500,000	570,105	791,553	118,337	909,890
2.7.1.6 Site Restoration	1.00	LS	392	510	1,154	0	2,437	3,383	294	3,678
2.7.2 10 Samuels Avenue	1.00	LS	32,352	7,493	134,715	0	205,204	284,180	24,724	308,903
2.7.2.1 Mobilization and Demobilization	1.00	LS	1,635	3,478	0	0	5,464	6,853	596	7,449
2.7.2.2 Earthwork	1.00	LS	1,133	1,997	295	0	3,665	5,089	443	5,531
2.7.2.3 Pavement, Sidewalks, Curbs, and Gutter	1.00	LS	29,584	2,018	134,420	0	196,076	272,238	23,685	295,923
2.7.3 15 Marine Creek	1.00	LS	592,881	87,252	708,710	408,000	2,032,073	2,788,090	392,807	3,180,897
2.7.3.1 Mobilization and Demobilization	1.00	LS	5,015	9,223	0	0	15,309	19,201	1,670	20,872
2.7.3.2 Site Preparation	1.00	LS	33,564	16,363	295	75,000	132,134	183,460	22,469	205,929
2.7.3.3 Earthwork	1.00	LS	2,441	4,945	0	80,000	87,907	122,053	17,561	139,614
2.7.3.4 Pavement, Sidewalks, Curbs, and Gutter	1.00	LS	25,492	1,739	115,830	0	168,959	234,588	20,409	254,997
2.7.3.5 Retaining Walls	1.00	LS	500,625	51,900	545,494	0	1,251,972	1,738,280	259,873	1,998,153
2.7.3.6 Electrical, Controls, and Instrumentation	1.00	LS	0	0	0	100,000	114,021	158,311	23,667	181,978
2.7.3.7 Site Restoration	1.00	LS	3,243	1,082	20,341	0	28,883	40,102	3,489	43,591
2.7.3.8 Bridges	1.00	LS	22,500	2,000	26,750	153,000	232,888	292,095	43,668	335,763
2.7.4 20 Ham Branch	1.00	LS	4,960	3,617	14,765	0	26,925	36,760	3,198	39,958
2.7.4.1 Mobilization and Demobilization	1.00	LS	1,402	2,952	0	0	4,654	5,837	508	6,344
2.7.4.2 Earthwork	1.00	LS	411	451	465	0	1,413	1,961	171	2,132
2.7.4.3 Pavement, Sidewalks, Curbs, and Gutter	1.00	LS	3,147	215	14,300	0	20,859	28,962	2,520	31,481

Description	Quantity	UOM	LaborCost	EQCost	MatlCost	SubBidCost	CostToPrime	ContractCost	Escalation	ProjectCost
2.7.5 25 Riverside Park	1.00	LS	17,815	7,384	101,187	205,000	380,928	528,160	66,234	594,394
2.7.5.1 Mobilization and Demobilization	1.00	LS	1,635	3,478	0	0	5,464	6,853	596	7,449
2.7.5.2 Earthwork	1.00	LS	601	970	295	0	1,992	2,766	241	3,007
2.7.5.3 Pavement, Sidewalks, Curbs, and Gutter	1.00	LS	15,579	2,936	100,892	0	139,729	194,005	16,878	210,883
2.7.5.4 Electrical, Controls, and Instrumentation	1.00	LS	0	0	0	205,000	233,743	324,537	48,518	373,055
2.7.6 30 Rockwood Park - West	1.00	LS	17,122	6,399	65,646	0	104,363	144,168	12,543	156,710
2.7.6.1 Mobilization and Demobilization	1.00	LS	1,635	3,478	0	0	5,464	6,853	596	7,449
2.7.6.2 Pavement, Sidewalks, Curbs, and Gutter	1.00	LS	14,383	981	65,351	0	95,326	132,354	11,515	143,869
2.7.6.3 Earthwork	1.00	LS	1,104	1,940	295	0	3,573	4,961	432	5,393
2.7.7 35 Riverside Oxbow/Gateway Park	1.00	LS	176,732	131,989	673,482	2,496,100	3,683,100	5,053,953	670,924	5,724,877
2.7.7.1 Riverside Oxbow	1.00	LS	141,302	43,168	580,335	2,421,100	3,372,747	4,623,781	626,078	5,249,859
2.7.7.1.1 Mobilization and Demobilization	1.00	LS	5,015	9,223	0	0	15,309	19,201	1,670	20,872
2.7.7.1.2 Earthwork	1.00	LS	11,014	22,266	127,058	0	162,668	225,854	19,649	245,503
2.7.7.1.3 Pavement, Sidewalks, Curbs, and Gutter	1.00	LS	67,817	1,871	323,887	0	464,288	644,633	56,083	700,716
2.7.7.1.4 Bridges	1.00	LS	45,000	4,000	53,500	270,000	424,728	532,707	79,640	612,347
2.7.7.1.5 Recreation Amenities	1.00	LS	0	0	0	1,834,800	1,834,800	2,547,498	380,851	2,928,349
2.7.7.1.6 Electrical, Controls, and Instrumentation	1.00	LS	0	0	0	188,300	214,702	298,099	44,566	342,665
2.7.7.1.7 Drainage	1.00	LS	2,366	1,046	16,870	88,000	124,019	172,192	23,688	195,880
2.7.7.1.8 Mechanical	1.00	LS	10,090	4,763	59,020	40,000	132,233	183,596	19,931	203,527
2.7.7.2 Gateway Park	1.00	LS	35,430	88,822	93,148	75,000	310,353	430,172	44,846	475,018

Description	Quantity	UOM	LaborCost	EQCost	MatlCost	SubBidCost	CostToPrime	ContractCost	Escalation	ProjectCost
2.7.7.2.1 Mobilization and Demobilization	1.00	LS	1,635	3,478	0	0	5,464	6,853	596	7,449
2.7.7.2.2 Site Preparation	1.00	LS	21,377	68,908	0	0	94,764	131,574	11,447	143,021
2.7.7.2.3 Earthwork	1.00	LS	12,417	16,436	93,148	0	124,610	173,012	15,052	188,064
2.7.7.2.4 Buildings	1.00	LS	0	0	0	75,000	85,516	118,733	17,751	136,484
2.8 15 Flood Control and Diversion Structures	1.00	LS	822,763	373,518	1,157,935	5,139,240	8,433,646	10,577,741	1,538,839	12,116,580
(Note: Three (3) gate control structures (Clear Fork, Trinity Point and TRWD) will be constructed for the project. All three (3) structures will be constructed of concrete with battered foundation piles providing support to bedrock. The Clear Fork gate will also have a sheet pile cutoff wall. Each gate will have one large (24 feet x 17 feet) vertical roller gate and at least one small (12 feet x 10 feet) vertical roller gate (Trinity Point Gate - two). The large gate will be used for normal water control and boat access to the interior area, while the smaller gate(s) will be used to seal off pedestrian access during flooding conditions. Gates can be inspected when open through internal access areas. In addition, each gate will have an enclosed control room and instrumentation system for monitoring the gates. Budgetary information on gate construction and installation costs was provided by General Electric Hydro.)										
2.8.1 10 Trinity Point	1.00	LS	822,763	373,518	1,157,935	5,139,240	8,433,646	10,577,741	1,538,839	12,116,580
2.8.1.1 Mobilization and Demobilization	1.00	LS	6,608	9,298	0	0	18,526	23,236	1,643	24,878
2.8.1.2 Site Preparation	1.00	LS	32,483	47,106	22,965	0	105,585	132,429	13,727	146,156
2.8.1.3 Excavation, Hauling, and Placement	1.00	LS	135,483	251,065	513,123	0	924,627	1,159,696	83,809	1,243,505
2.8.1.4 Pavement, Sidewalks, Curbs and Gutter	1.00	LS	103	163	7,920	0	9,358	11,737	830	12,567
2.8.1.5 Training Walls	1.00	LS	641,125	62,420	581,535	0	1,465,261	1,837,776	219,086	2,056,862
2.8.1.6 Mechanical	1.00	LS	1,571	132	7,819	0	11,240	14,097	997	15,094
2.8.1.7 Finishes	1.00	LS	0	0	0	1,110,000	1,265,633	1,587,396	204,298	1,791,694
2.8.1.8 Flood Control Structures	1.00	LS	202	158	0	3,674,240	4,189,864	5,255,057	945,673	6,200,729
2.8.1.9 Electrical, Controls, and Instrumentation	1.00	LS	13	0	37	355,000	404,833	507,755	65,344	573,098
2.8.1.10 Site Restoration	1.00	LS	5,176	3,177	24,536	0	38,719	48,563	3,433	51,996
2.9 30 Planning, Engineering, and Design	1.00	LS	0	0	0	32,717,096	0	32,717,096	0	32,717,096

Description	Quantity	UOM	LaborCost	EQCost	MatlCost	SubBidCost	CostToPrime	ContractCost	Escalation	ProjectCost
(Note: This category includes anticipated costs for design and permitting including but not limited to development of final designs, contract bid packages, cost estimation, engineering services during construction, environmental permitting, and permit fees. The costs are divided into two main tasks: 1) A/E Design Fees and 2) Permits, Fees, and Licenses. Costs under this category are based on a percentage of the total construction cost with contingency. Based on the complexity, magnitude, and duration of the project the costs have been assumed as approximately 5.0% for A/E Design Fees and 1.7% for Permits, Fees and Licenses for a total of 6.7% for this category.)										
2.10 31 Construction Management	**1.00**	**LS**	**0**	**0**	**0**	**40,432,378**	**0**	**40,432,378**	**0**	**40,432,378**
(Note: This category includes anticipated costs for program management and construction management. A. Program Management This category includes anticipated costs for program management services during the design and construction of the project. Program management services are anticipated, but not limited to be: Agency Coordination/Management, Standards Development, Maintenance of Project Records and Base Files, Funding/ Grants and Cost Accounting, Contract Procurement, Project Schedule Maintenance, and Closeout. Costs under this category are based on a percentage of the total construction cost with contingency. Based on the complexity, magnitude, and duration of the project the costs have been assumed as approximately 4.9% for this category. No contingency was included on these costs. B. Construction Management This category includes anticipated costs for construction management including but not limited to costs for: meetings (pre-con, progress, post-con), field coordination, inspection, survey control, contract modifications, payment request processing. Costs under this category are based on a percentage of the total construction cost with contingency. Based on the complexity, magnitude, and duration of the project the costs have been assumed as approximately 4.6% for this category.)										
2.11 33 HTRW	**1.00**	**LS**	**0**	**0**	**0**	**17,558,239**	**17,558,239**	**22,022,088**	**2,800,467**	**24,822,555**
(Note: The HTRW category includes costs for environmental services and remediation on the project and was developed based on the results of the environmental records review completed for the potentially impacted properties during the initial EIS phase. For the Phase I and Phase II site assessments the following allowances were used: Update the Phase I EIS data, 173 parcels at an cost of $1,000/ site; Phase II site assessments assumed 106 sites at $9,200/site: soil and groundwater testing 1350 samples at $335/sample and 413 samples at $430/sample; asbestos surveys estimated at 50 building at $1,150/structure Environmental remediation costs for the project were developed primarily for the potentially impacted properties within the proposed bypass channel at each of the sites with records indicating potential release of petroleum or hazardous chemicals. Costs include, but are not limited to, the following: - Investigation of assumed contaminated sites; - Excavation and disposal of underground storage tanks (USTs) and accompanying contaminated soils; - Placement of short-term groundwater recovery/treatment systems at locations with leaking USTs (LUSTs)/USTs; - Excavation and disposal of assumed volumes of contaminated soil based on the number of databases that each site appears within; - Analytical costs for characterization of the contaminated soils for disposal and confirmation of complete removal; and - Engineering design fees and administrative costs for following required regulatory guidelines and submittal of appropriate reports to regulatory agencies. Asbestos abatement costs were calculated based on factoring the total square footage buildings to be removed to determine office type space within the total building footprint which would likely contain asbestos. Of the total of 1.5 million square feet of buildings to be demolished, 50 % is assumed to be finished and of that amount 20% was assumed to contain asbestos. Abatement unit price were then used from MEANS Environmental Remediation Book to determine the estimated asbestos abatement cost. The HTRW construction costs are based on the best available information at this time and will be updated and refined as design development is advanced and more information can be obtained within the project footprint.)										
2.11.1 Envrionmental Assessments	**1.00**	**LS**	**0**	**0**	**0**	**1,889,200**	**1,889,200**	**2,369,493**	**259,387**	**2,628,880**
2.11.2 Site Remediation	**1.00**	**LS**	**0**	**0**	**0**	**14,002,039**	**14,002,039**	**17,561,791**	**2,270,740**	**19,832,531**

Description	Quantity	UOM	LaborCost	EQCost	MatlCost	SubBidCost	CostToPrime	ContractCost	Escalation	ProjectCost
2.11.3 Remediation Program Management	**1.00**	**LS**	**0**	**0**	**0**	**1,667,000**	**1,667,000**	**2,090,803**	**270,341**	**2,361,144**

Appendix B
Schedule

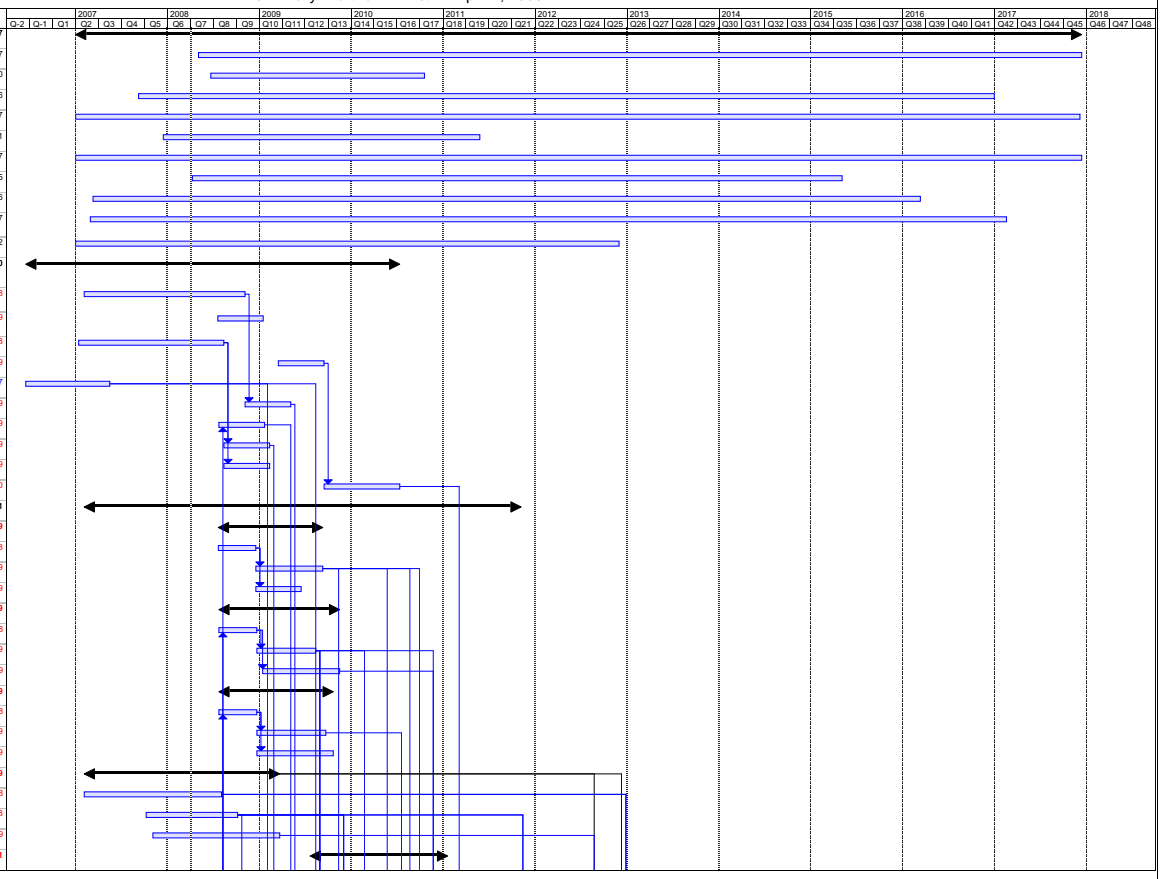
FORT WORTH CENTRAL CITY

Preliminary Project Schedule

Preliminary Draft for MII Est. April 1, 2008

TRWD
City of Fort Worth
USACE
Others

ID	Task Name	Start	Finish
1	**Program Management**	**Wed 1/3/07**	**Tue 12/12/17**
2	Maintain Master Schedule	Mon 5/5/08	Tue 12/12/17
3	Permitting	Mon 6/23/08	Tue 10/19/10
4	Project Budget	Mon 9/10/07	Fri 12/30/16
5	Agency Coordination	Wed 1/3/07	Tue 12/5/17
6	Standards Development	Mon 12/17/07	Fri 5/27/11
7	Funding Assistance	Wed 1/3/07	Tue 12/12/17
8	Project Update USACE / CDC Models -	Fri 4/11/08	Tue 5/5/15
9	Maintain Base Survey - Control File	Tue 3/13/07	Fri 3/11/16
10	Contract Management Design/Construction	Fri 3/2/07	Thu 2/16/17
11	Legal Assistance	Wed 1/3/07	Fri 11/30/12
12	**Real Property Environmental Assessment**	**Mon 6/19/06**	**Tue 7/13/10**
13	Ph I Site Assessments - Henderson Priority Properties	Tue 2/6/07	Wed 11/5/08
14	Ph I Site Assessments - White Settlement/Main Roadway Properties	Mon 7/21/08	Fri 1/16/09
15	Ph I Site Assessments - Channel/Mitigation	Mon 1/15/07	Wed 8/13/08
16	Ph I Site Assessments - Interior	Wed 3/18/09	Tue 9/15/09
17	Asbestos Surveys	Mon 6/19/06	Fri 5/18/07
18	Ph II Site Assessments - Henderson/Priority	Thu 11/6/08	Wed 5/6/09
19	Ph II Site Assessments WS/Main Roadway	Fri 7/25/08	Thu 1/22/09
20	Ph II Site Assessments -Channel	Thu 8/14/08	Wed 2/11/09
21	Ph II Site Assessments -Mitigation	Thu 8/14/08	Wed 2/11/09
22	Ph II Site Assessments - Interior	Wed 9/16/09	Tue 7/13/10
23	**Property Acquisition & Relocation**	**Tue 2/6/07**	**Mon 11/7/11**
24	**Roadway & Bridges - Henderson Priority**	**Wed 7/23/08**	**Thu 9/10/09**
25	Appraisals, Surveys, Engr, Legal	Wed 7/23/08	Thu 12/18/08
26	Acquisition	Fri 12/19/08	Thu 9/10/09
27	Relocations	Fri 12/19/08	Tue 6/16/09
28	**Roadway & Bridges -White Settlement**	**Fri 7/25/08**	**Mon 11/16/09**
29	Appraisals, Surveys, Engr, Legal	Fri 7/25/08	Mon 12/22/08
30	Acquisition	Tue 12/23/08	Thu 8/13/09
31	Relocations	Thu 1/15/09	Mon 11/16/09
32	**Roadway & Bridges - Main**	**Fri 7/25/08**	**Thu 10/22/09**
33	Appraisals, Surveys, Engr, Legal	Fri 7/25/08	Mon 12/22/08
34	Acquisition	Tue 12/23/08	Tue 9/22/09
35	Relocations	Tue 12/23/08	Thu 10/22/09
36	**Channel Alignment**	**Tue 2/6/07**	**Mon 3/23/09**
37	Appraisals, Surveys, Engr, Legal	Tue 2/6/07	Mon 8/4/08
38	Acquisition	Wed 10/10/07	Tue 10/7/08
39	Relocations	Tue 11/6/07	Mon 3/23/09
40	**Water Feature**	**Thu 7/23/09**	**Wed 1/19/11**



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FORT WORTH CENTRAL CITY

Preliminary Project Schedule

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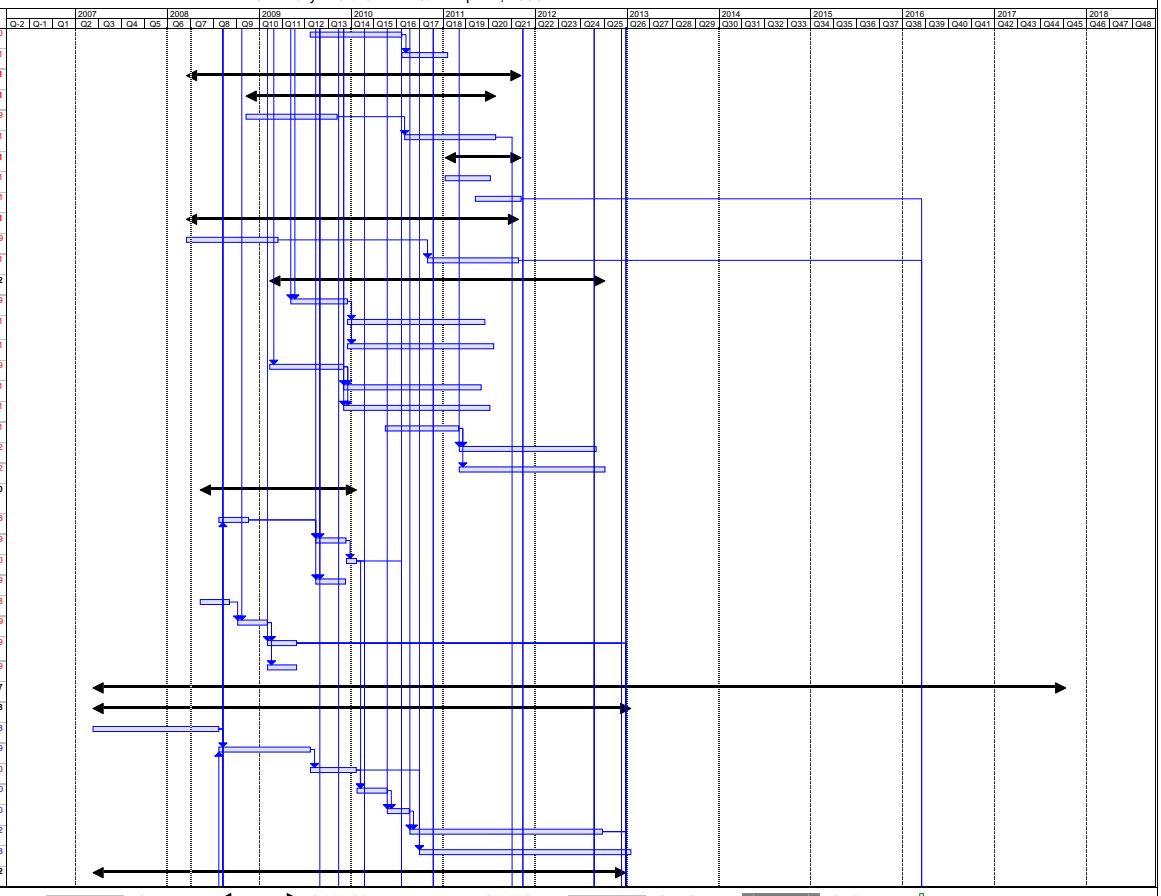
TRWD
City of Fort Worth
USACE
Others

ID	Task Name	Start	Finish
41	Appraisals, Surveys, Engr, Legal	Thu 7/23/09	Wed 7/21/10
42	Acquisition	Thu 7/22/10	Wed 1/19/11
43	**Mitigation Sites**	**Tue 3/18/08**	**Mon 11/7/11**
44	**University Dr.**	**Mon 11/10/08**	**Fri 7/29/11**
45	Appraisals, Surveys, Engr, Legal	Mon 11/10/08	Fri 11/6/09
46	Acquisition	Mon 8/2/10	Fri 7/29/11
47	**Samuels/Marine Creek Dams**	**Mon 1/10/11**	**Mon 11/7/11**
48	Appraisals, Surveys, Engr, Legal	Mon 1/10/11	Fri 7/8/11
49	Acquisition	Tue 5/10/11	Mon 11/7/11
50	**Riverside Oxbow/Gateway**	**Tue 3/18/08**	**Fri 10/28/11**
51	Appraisals, Surveys, Engr, Legal	Tue 3/18/08	Mon 3/16/09
52	Acquisition	Mon 11/1/10	Fri 10/28/11
53	**Environmental Remediation**	**Thu 2/12/09**	**Fri 10/5/12**
54	Design & Approvals Bridge/ Roadway	Thu 5/7/09	Thu 12/17/09
55	Remediation/Removal/Disposal (Bridge/ Roadway)	Fri 12/18/09	Thu 6/16/11
56	CM Remed. (Bridge/ Roadway)	Fri 12/18/09	Thu 7/21/11
57	Design & Approvals Channel	Thu 2/12/09	Wed 12/2/09
58	Remediation/Removal/Disposal Channel	Thu 12/3/09	Wed 6/1/11
59	CM Remed. Channel	Thu 12/3/09	Wed 7/6/11
60	Design & Approvals (Mitigation/Other)	Mon 5/17/10	Fri 3/4/11
61	Remediation/Removal/Disposal (Mitigation/O	Mon 3/7/11	Fri 8/31/12
62	CM Remed. (Mitigation/Other)	Mon 3/7/11	Fri 10/5/12
63	**Demolition - Removal/Disposal Structures**	**Mon 5/12/08**	**Fri 1/22/10**
64	Plans/Procurement Demo- (Bridge/ Roadway	Fri 7/25/08	Wed 11/19/08
65	Asbestos Removal	Fri 8/14/09	Fri 12/11/09
66	Remove/Dispose Structures (Bridge/ Roadwa	Mon 12/14/09	Fri 1/22/10
67	CM Demolition	Fri 8/14/09	Wed 12/9/09
68	Plans/Procurement Demo Primary Channel	Mon 5/12/08	Thu 9/4/08
69	Asbestos Removal	Wed 10/8/08	Mon 2/2/09
70	Remove/Dispose Structures Primary Channel	Tue 2/3/09	Fri 5/29/09
71	CM Demolition	Tue 2/3/09	Fri 5/29/09
72	**Bridge Contracts**	**Tue 3/13/07**	**Tue 10/10/17**
73	**Henderson - Bridge & Roadway**	**Tue 3/13/07**	**Wed 1/16/13**
74	Concept Selection & Development	Tue 3/13/07	Thu 7/24/08
75	Design	Fri 7/25/08	Thu 7/23/09
76	Review -TxDOT	Fri 7/24/09	Thu 1/21/10
77	Procurement	Mon 1/25/10	Mon 5/24/10
78	Construct Temporary Detour	Tue 5/25/10	Fri 8/20/10
79	Construct Bridge	Mon 8/23/10	Tue 9/25/12
80	CM	Thu 9/30/10	Wed 1/16/13
81	**White Settlement- Bridge & Roadw**	**Tue 3/13/07**	**Thu 12/27/12**



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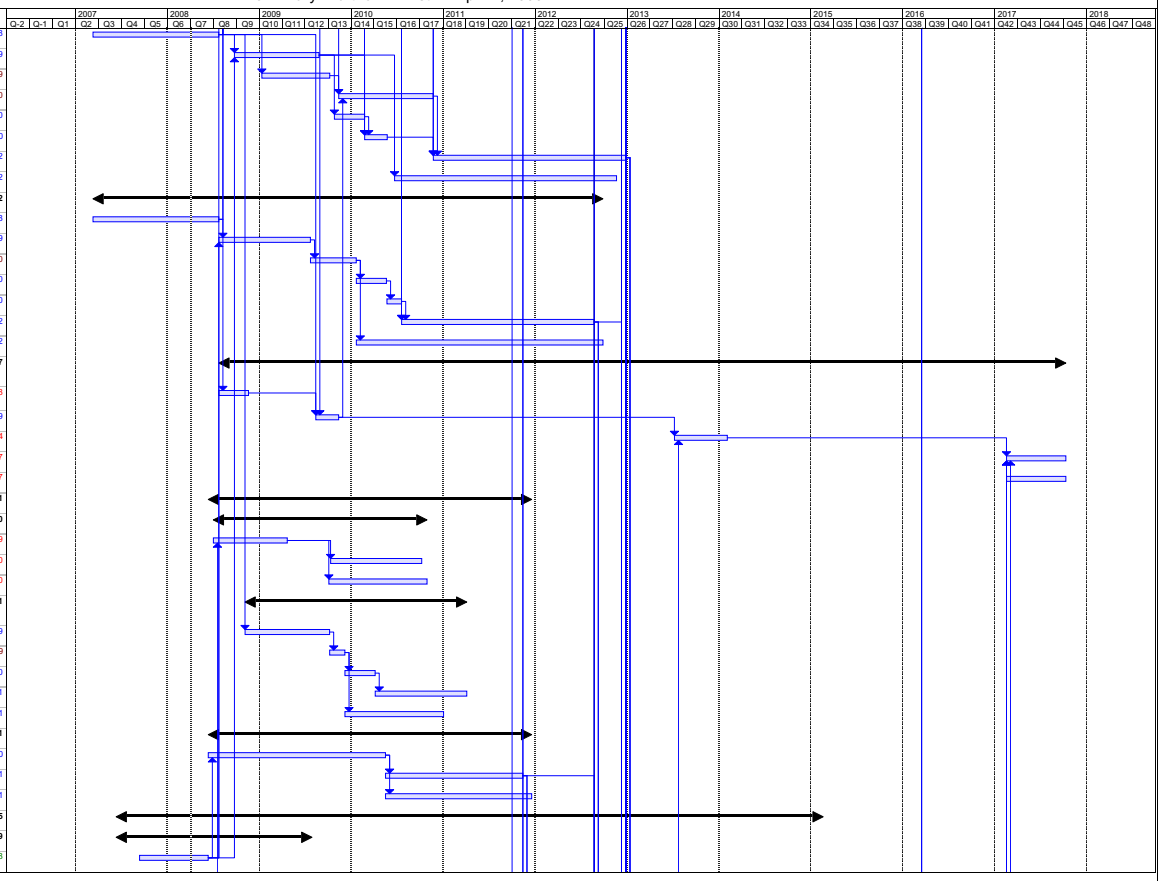
FORT WORTH CENTRAL CITY

Preliminary Project Schedule

Preliminary Draft for MII Est. April 1, 2008

TRWD
City of Fort Worth
USACE
Others

ID	Task Name	Start	Finish
82	Concept Selection & Development	Tue 3/13/07	Thu 7/24/08
83	Design Roadway/Bridge	Thu 9/25/08	Wed 8/26/09
84	Design TXU Relocation	Mon 1/12/09	Thu 10/8/09
85	Relocate TXU 138 kV Overhead	Fri 11/13/09	Tue 11/23/10
86	Procurement	Tue 10/27/09	Tue 2/23/10
87	Construct Temporary Detour	Wed 2/24/10	Mon 5/24/10
88	Construct Bridge	Wed 11/24/10	Thu 12/27/12
89	CM	Wed 6/23/10	Tue 11/20/12
90	**Main Street - Bridge**	**Tue 3/13/07**	**Thu 9/27/12**
91	Concept Selection & Development	Tue 3/13/07	Thu 7/24/08
92	Design	Fri 7/25/08	Thu 7/23/09
93	Review TxDOT	Fri 7/24/09	Thu 1/21/10
94	Procurement	Fri 1/22/10	Fri 5/21/10
95	Construct Temporary Detour	Mon 5/24/10	Tue 7/20/10
96	Construct Bridge	Wed 7/21/10	Thu 8/23/12
97	CM	Fri 1/22/10	Thu 9/27/12
98	**White Settlement Extension and Bridge**	**Fri 7/25/08**	**Tue 10/10/17**
99	Roadway Extension Alignment East & Bridge Crossing (Prel.)	Fri 7/25/08	Wed 11/19/08
100	R-O-W Dedication	Fri 8/14/09	Thu 11/12/09
101	Design Extension & Bridge	Tue 7/9/13	Mon 2/3/14
102	Construction Extension & Bridge	Fri 2/17/17	Tue 10/10/17
103	CM Extension	Fri 2/17/17	Tue 10/10/17
104	**Local Streets and Utilities**	**Fri 6/13/08**	**Mon 12/19/11**
105	**Local Street Modifications**	**Thu 7/3/08**	**Fri 10/29/10**
106	Design	Thu 7/3/08	Wed 4/22/09
107	Construction	Mon 10/12/09	Fri 10/8/10
108	CM	Mon 10/5/09	Fri 10/29/10
109	**Henderson/White Settlement Intersection**	**Thu 11/6/08**	**Tue 4/5/11**
110	Design	Thu 11/6/08	Wed 10/7/09
111	TxDOT Review	Thu 10/8/09	Mon 12/7/09
112	Procurement	Tue 12/8/09	Tue 4/6/10
113	Construction	Wed 4/7/10	Tue 4/5/11
114	CM	Tue 12/8/09	Mon 1/3/11
115	**Utility Relocations**	**Fri 6/13/08**	**Mon 12/19/11**
116	Design	Fri 6/13/08	Mon 5/17/10
117	Construction	Tue 5/18/10	Mon 11/14/11
118	CM	Tue 5/18/10	Mon 12/19/11
119	**Bypass Channel, Levees, & Walls**	**Wed 6/13/07**	**Thu 2/19/15**
120	**Design**	**Wed 6/13/07**	**Wed 7/29/09**
121	Geometric/Hydraulic Design	Fri 9/14/07	Thu 6/12/08



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FORT WORTH CENTRAL CITY

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USACE
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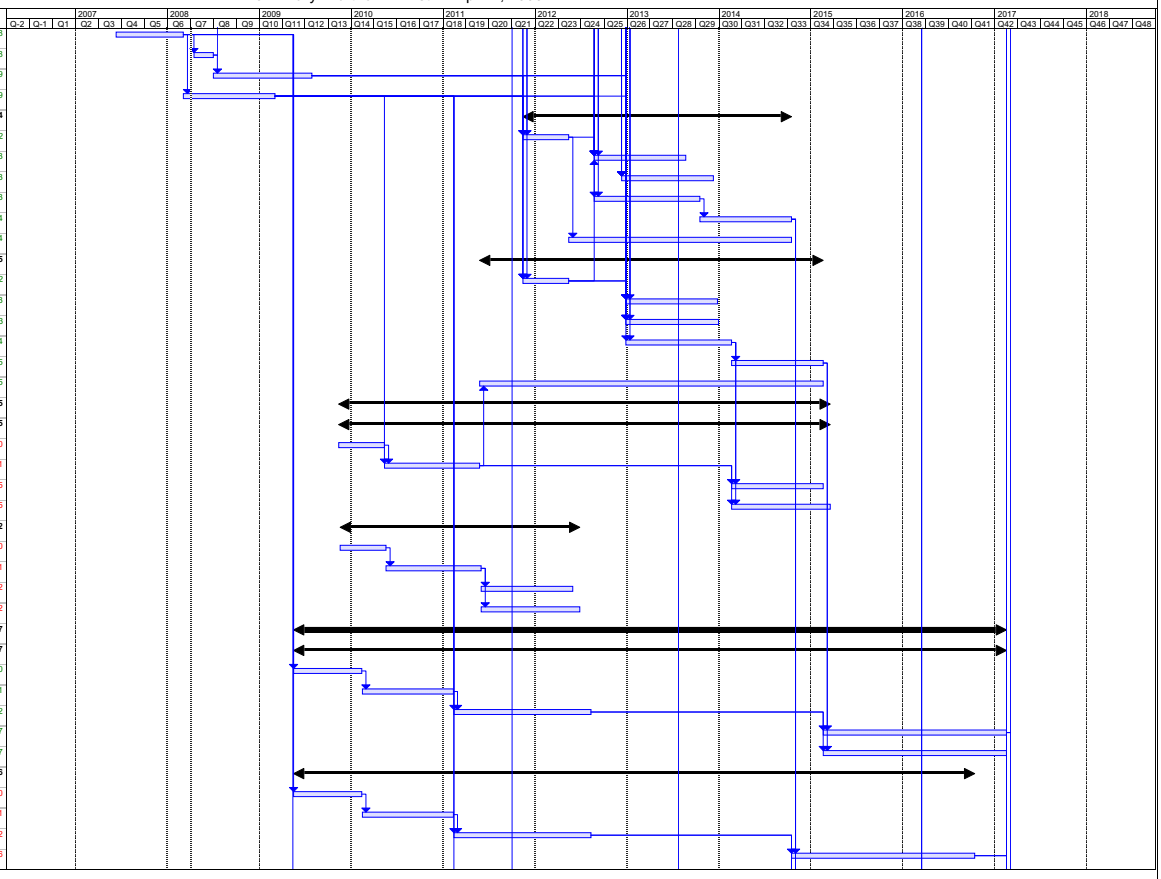
ID	Task Name	Start	Finish
122	Geotechnical	Wed 6/13/07	Wed 3/5/08
123	Preliminary Design Civil/Structural	Thu 4/17/08	Wed 7/2/08
124	Design Civil	Thu 7/3/08	Wed 7/29/09
125	Design Hard Edge Retaining Walls	Thu 3/6/08	Wed 3/4/09
126	**Lower (North) Channel**	**Tue 11/15/11**	**Thu 10/16/14**
127	Procurement	Tue 11/15/11	Mon 5/14/12
128	Excavation	Fri 8/24/12	Thu 8/22/13
129	Levees & Embankments	Tue 12/11/12	Tue 12/10/13
130	Retaining Walls	Fri 8/24/12	Thu 10/17/13
131	Tie-in Levee/Walls	Fri 10/18/13	Thu 10/16/14
132	CM	Tue 5/15/12	Thu 10/16/14
133	**Upper (South) Channel**	**Fri 5/27/11**	**Thu 2/19/15**
134	Procurement	Tue 11/15/11	Mon 5/14/12
135	Excavation	Fri 12/28/12	Thu 12/26/13
136	Levees & Embankments	Fri 12/28/12	Mon 12/30/13
137	Retaining Walls	Fri 12/28/12	Thu 2/20/14
138	Tie-in Levee/Walls	Fri 2/21/14	Thu 2/19/15
139	CM	Fri 5/27/11	Thu 2/19/15
140	**Pedestrian Bridges**	**Fri 11/13/09**	**Thu 3/19/15**
141	**Upper Bypass**	**Fri 11/13/09**	**Thu 3/19/15**
142	Prel.Concept Design	Fri 11/13/09	Thu 5/13/10
143	Design	Fri 5/14/10	Thu 5/26/11
144	Construction	Fri 2/21/14	Thu 2/19/15
145	CM	Fri 2/21/14	Thu 3/19/15
146	**West Fork**	**Thu 11/19/09**	**Wed 6/27/12**
147	Prel. Concept Design	Thu 11/19/09	Wed 5/19/10
148	Design	Thu 5/20/10	Wed 6/1/11
149	Construction	Thu 6/2/11	Wed 5/30/12
150	CM	Thu 6/2/11	Wed 6/27/12
151	**Isolation Gates**	**Mon 5/18/09**	**Thu 2/16/17**
152	**Clear Fork Gate**	**Mon 5/18/09**	**Thu 2/16/17**
153	Geotechnical	Mon 5/18/09	Fri 2/12/10
154	Preliminary Civil/Structural	Mon 2/15/10	Fri 2/11/11
155	Design	Mon 2/14/11	Fri 8/10/12
156	Construction	Fri 2/20/15	Thu 2/16/17
157	CM	Fri 2/20/15	Thu 2/16/17
158	**TRWD Gate**	**Mon 5/18/09**	**Thu 10/13/16**
159	Geotechnical	Mon 5/18/09	Fri 2/12/10
160	Preliminary Civil/Structural	Mon 2/15/10	Fri 2/11/11
161	Design	Mon 2/14/11	Fri 8/10/12
162	Construction	Fri 10/17/14	Thu 10/13/16



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FORT WORTH CENTRAL CITY

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Preliminary Draft for MII Est. April 1, 2008

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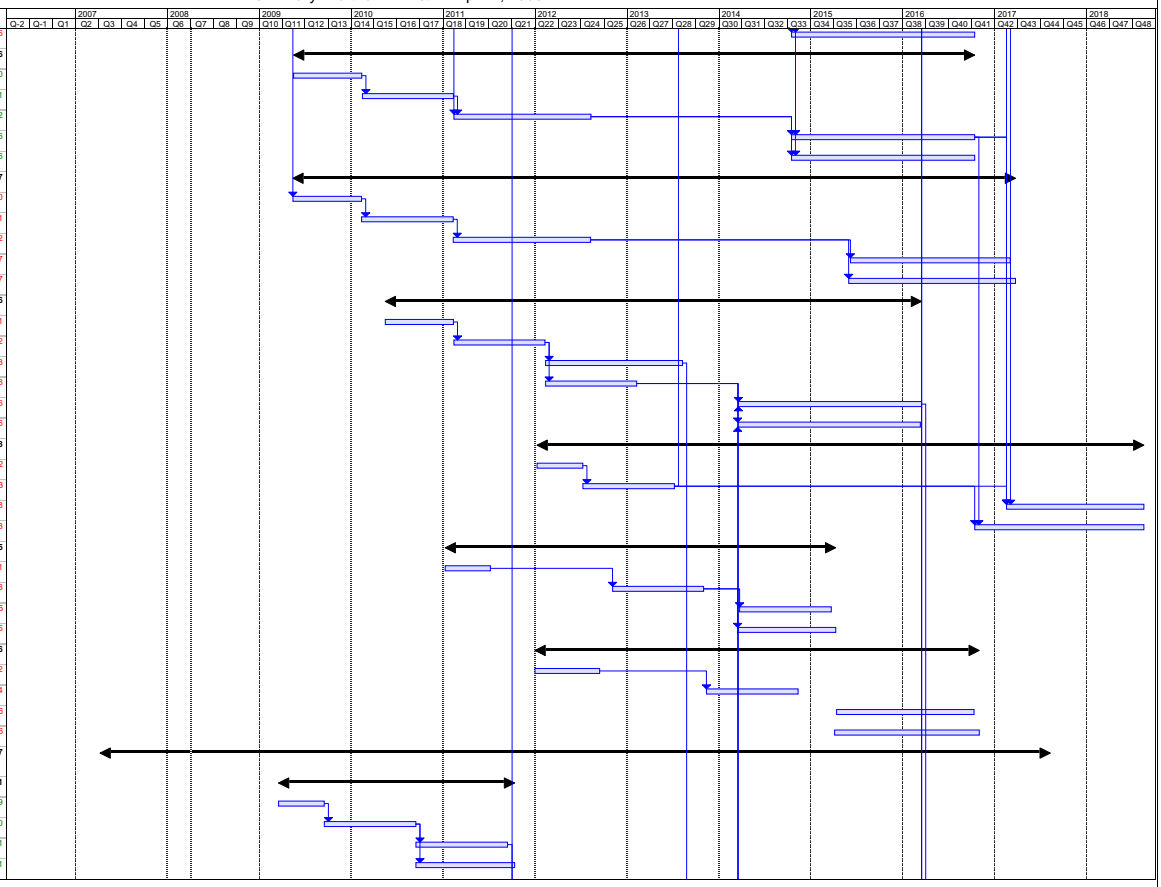
ID	Task Name	Start	Finish
163	CM	Fri 10/17/14	Thu 10/13/16
164	**West Fork Gate**	**Mon 5/18/09**	**Thu 10/13/16**
165	Geotechnical	Mon 5/18/09	Fri 2/12/10
166	Preliminary Civil/Structural	Mon 2/15/10	Fri 2/11/11
167	Design	Mon 2/14/11	Fri 8/10/12
168	Construction	Fri 10/17/14	Thu 10/13/16
169	CM	Fri 10/17/14	Thu 10/13/16
170	**Stormwater Pump Station**	**Fri 5/15/09**	**Fri 3/24/17**
171	Geotechnical	Fri 5/15/09	Thu 2/11/10
172	Preliminary Civil/Structural	Fri 2/12/10	Thu 2/10/11
173	Design	Fri 2/11/11	Thu 8/9/12
174	Construction	Mon 6/8/15	Fri 3/3/17
175	CM	Mon 6/1/15	Fri 3/24/17
176	**Samuel's and Marine Creek Dams**	**Mon 5/17/10**	**Wed 3/16/16**
177	Geotechnical	Mon 5/17/10	Fri 2/11/11
178	Peliminary Civil Structural	Mon 2/14/11	Fri 2/10/12
179	Design	Mon 2/13/12	Fri 8/9/13
180	Physical Model	Mon 2/13/12	Fri 2/8/13
181	Construction	Thu 3/20/14	Wed 3/16/16
182	CM	Mon 3/17/14	Fri 3/11/16
183	**Interior Water Feature**	**Tue 1/10/12**	**Thu 8/16/18**
184	Prelim. Design/Geotech.	Tue 1/10/12	Mon 7/9/12
185	Design	Tue 7/10/12	Mon 7/8/13
186	Construction	Fri 2/17/17	Thu 8/16/18
187	CM	Fri 10/14/16	Thu 8/16/18
188	**Marine Creek Reconstruction**	**Mon 1/10/11**	**Fri 4/10/15**
189	Prelim. Design/Geotech.	Mon 1/10/11	Fri 7/8/11
190	Design	Mon 11/5/12	Fri 11/1/13
191	Construction	Tue 3/25/14	Mon 3/23/15
192	CM	Mon 3/17/14	Fri 4/10/15
193	**Recirculation System**	**Mon 1/2/12**	**Mon 10/31/16**
194	Prelim. Design/Geotech.	Mon 1/2/12	Fri 9/14/12
195	Design	Wed 11/13/13	Tue 11/11/14
196	Construction	Tue 4/14/15	Mon 10/10/16
197	CM	Mon 4/6/15	Mon 10/31/16
198	**Valley Storage/Ecosystem Mitigation.**	**Tue 4/10/07**	**Wed 8/9/17**
199	**Rockwood West**	**Thu 3/19/09**	**Wed 10/12/11**
200	Concept Design	Thu 3/19/09	Wed 9/16/09
201	Design Rockwood	Thu 9/17/09	Wed 9/15/10
202	Construction Rockwood	Thu 9/16/10	Wed 9/14/11
203	CM Rockwood	Thu 9/16/10	Wed 10/12/11



Notes: Task, Split, Progress, Milestone, Summary, Rolled Up Task, Rolled Up Split, Rolled Up Milestone, Rolled Up Progress, External Tasks, Project Summary, External Milestone, Deadline

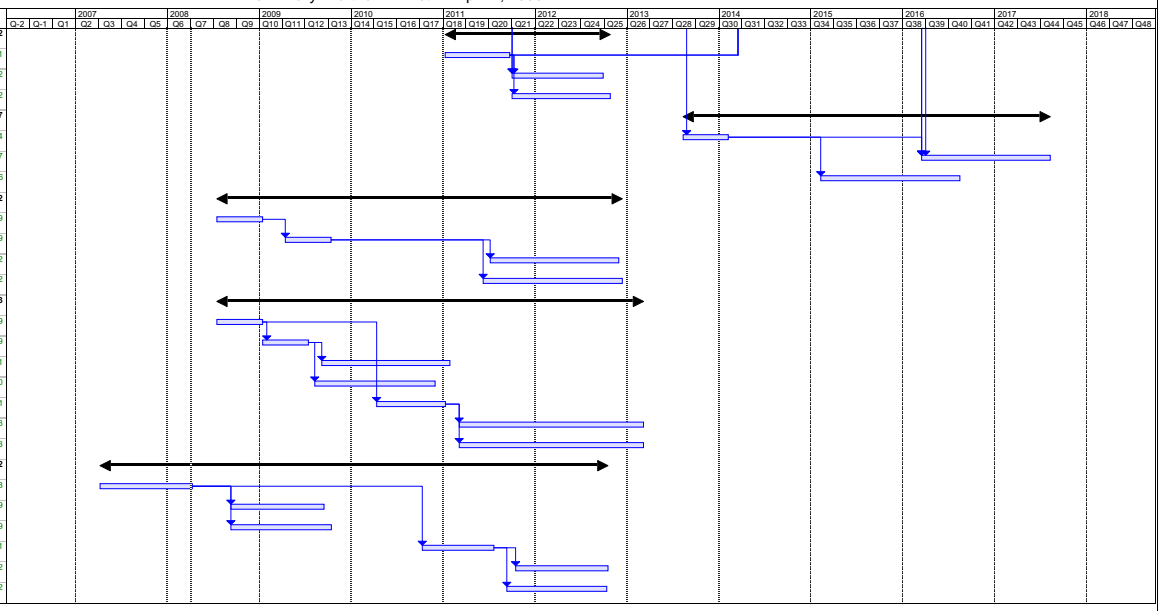
FORT WORTH CENTRAL CITY

Preliminary Project Schedule

Preliminary Draft for MII Est. April 1, 2008

TRWD
City of Fort Worth
USACE
Others

ID	Task Name	Start	Finish
204	**University Site**	**Mon 1/10/11**	**Fri 10/26/12**
205	Design University	Mon 1/10/11	Fri 9/23/11
206	Construction University	Mon 10/3/11	Fri 9/28/12
207	CM University	Mon 10/3/11	Fri 10/26/12
208	**Samuels Sites**	**Mon 8/12/13**	**Wed 8/9/17**
209	Design Samuels	Mon 8/12/13	Fri 2/7/14
210	Construction Samuels	Thu 3/17/16	Wed 8/9/17
211	CM Samuels	Tue 2/10/15	Mon 8/15/16
212	**Riverside Park**	**Thu 7/17/08**	**Thu 12/13/12**
213	Riverside Master Plan	Thu 7/17/08	Wed 1/14/09
214	Design Riverside	Wed 4/15/09	Tue 10/13/09
215	Construction Riverside	Fri 7/8/11	Thu 11/29/12
216	CM Riverside	Fri 6/10/11	Thu 12/13/12
217	**Riverside/Gateway**	**Thu 7/17/08**	**Thu 3/7/13**
218	Riverside/Gateway Master Plan	Thu 7/17/08	Wed 1/14/09
219	Design Riverside/Gateway Phase I	Thu 1/15/09	Wed 7/15/09
220	Construction Riverside/Gateway Phase	Mon 9/7/09	Fri 1/28/11
221	CM Riverside/Gateway Phase I	Mon 8/10/09	Tue 11/30/10
222	Design Riverside/Gateway Phase II	Tue 4/13/10	Mon 1/10/11
223	Construction Riverside/Gateway Phase	Mon 3/7/11	Thu 3/7/13
224	CM Riverside/Gateway Phase II	Mon 3/7/11	Thu 3/7/13
225	**Ham Branch**	**Tue 4/10/07**	**Wed 10/17/12**
226	Design Ham Branch Ecosystem	Tue 4/10/07	Thu 4/10/08
227	Construction Ham Branch Ecosystem	Thu 9/11/08	Tue 9/15/09
228	CM Ham Branch Ecosystem	Thu 9/11/08	Wed 10/14/09
229	Design Ham Branch Valley Storage	Mon 10/11/10	Fri 7/22/11
230	Construction Ham Branch Valley Storage	Mon 10/17/11	Wed 10/17/12
231	CM Ham Branch Valley Storage	Mon 9/12/11	Fri 10/12/12



Notes: Task, Split, Progress, Milestone, Summary, Rolled Up Task, Rolled Up Split, Rolled Up Milestone, Rolled Up Progress, External Tasks, Project Summary, External Milestone, Deadline

Appendix C
Cost Risk Factor Probability Distributions

Crystal Ball Report - Assumptions

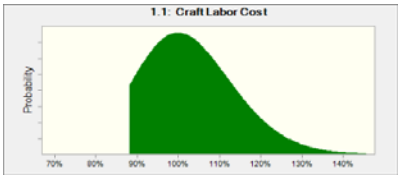
Worksheet: [FWCC Cost Risk Analysis.xls]Risk Impact Table

Assumption: 1.1: Craft Labor Cost **Cell: E6**

Lognormal distribution with parameters:

Mean	102%
Std. Dev.	12%

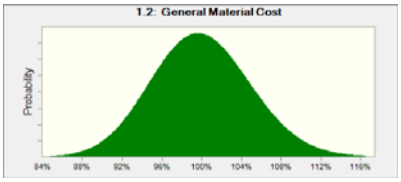
Selected range is from 88% to Infinity



Assumption: 1.2: General Material Cost **Cell: E7**

Lognormal distribution with parameters:

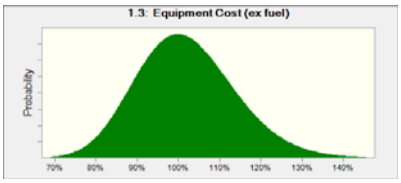
Mean	100%
Std. Dev.	5%



Assumption: 1.3: Equipment Cost (ex fuel) **Cell: E8**

Lognormal distribution with parameters:

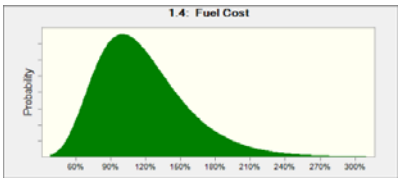
Mean	102%
Std. Dev.	12%



Assumption: 1.4: Fuel Cost **Cell: E9**

Lognormal distribution with parameters:

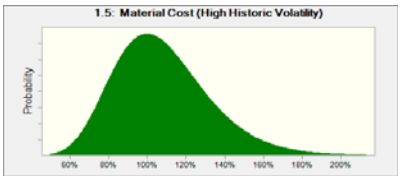
Mean	118%
Std. Dev.	40%



Assumption: 1.5: Material Cost (High Historic Volatility) **Cell: E10**

Lognormal distribution with parameters:

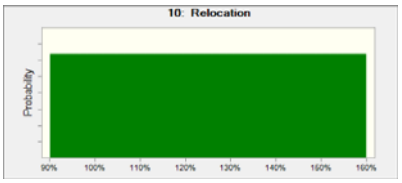
Mean	108%
Std. Dev.	25%



Assumption: 10: Relocation **Cell: E33**

Uniform distribution with parameters:

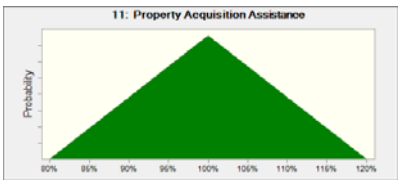
Minimum	90%
Maximum	160%



Assumption: 11: Property Acquisition Assistance **Cell: E34**

Triangular distribution with parameters:

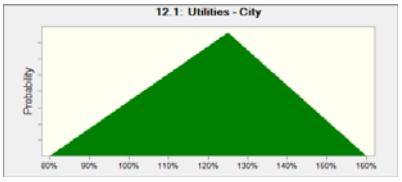
Minimum	80%
Likeliest	100%
Maximum	120%



Assumption: 12.1: Utilities - City **Cell: E36**

Triangular distribution with parameters:

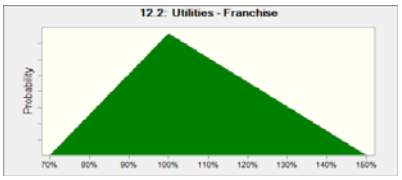
Minimum	80%
Likeliest	125%
Maximum	160%



Assumption: 12.2: Utilities - Franchise **Cell: E37**

Triangular distribution with parameters:

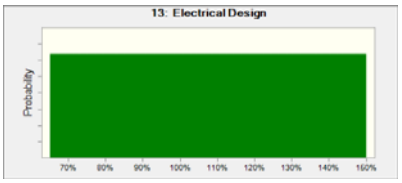
Minimum	70%
Likeliest	100%
Maximum	150%



Assumption: 13: Electrical Design **Cell: E38**

Uniform distribution with parameters:

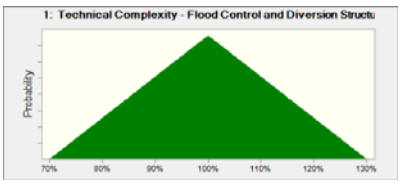
Minimum	65%
Maximum	150%



Assumption: 14.1: Technical Complexity - Flood Control and Diversion Structures **Cell: E40**

Triangular distribution with parameters:

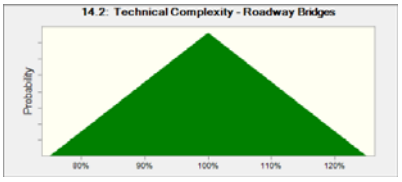
Minimum	70%
Likeliest	100%
Maximum	130%



Assumption: 14.2: Technical Complexity - Roadway Bridges **Cell: E41**

Triangular distribution with parameters:

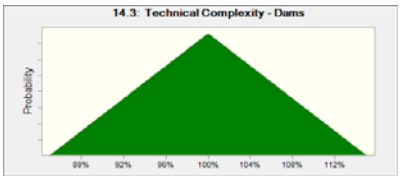
Minimum	75%
Likeliest	100%
Maximum	125%



Assumption: 14.3: Technical Complexity - Dams **Cell: E42**

Triangular distribution with parameters:

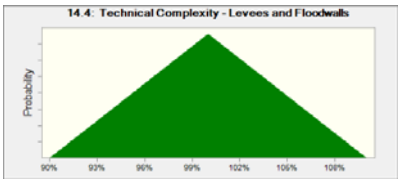
Minimum	85%
Likeliest	100%
Maximum	115%



Assumption: 14.4: Technical Complexity - Levees and Floodwalls **Cell: E43**

Triangular distribution with parameters:

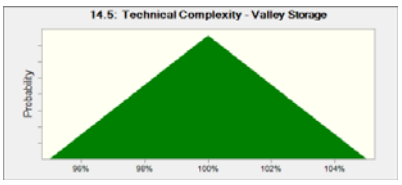
Minimum	90%
Likeliest	100%
Maximum	110%



Assumption: 14.5: Technical Complexity - Valley Storage **Cell: E44**

Triangular distribution with parameters:

Minimum	95%
Likeliest	100%
Maximum	105%



Assumption: 15: Contract Acquisition Strategy - Federal **Cell: E45**

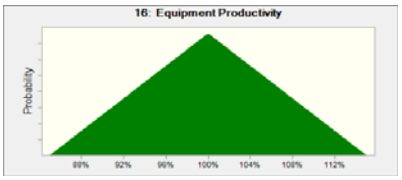
Triangular distribution with parameters:

Minimum	100%
Likeliest	100%
Maximum	110%

Assumption: 16: Equipment Productivity **Cell: E46**

Triangular distribution with parameters:

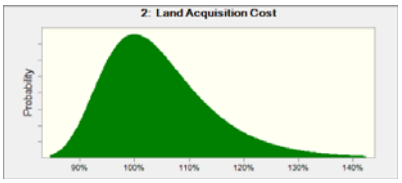
Minimum	85%
Likeliest	100%
Maximum	115%



Assumption: 2: Land Acquisition Cost **Cell: E11**

Maximum Extreme distribution with parameters:

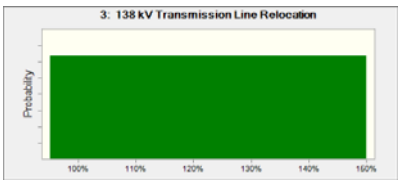
Likeliest	100%
Scale	8%



Assumption: 3: 138 kV Transmission Line Relocation **Cell: E12**

Uniform distribution with parameters:

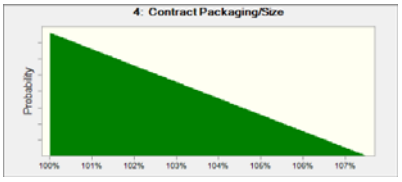
Minimum	95%
Maximum	150%



Assumption: 4: Contract Packaging/Size **Cell: E13**

Triangular distribution with parameters:

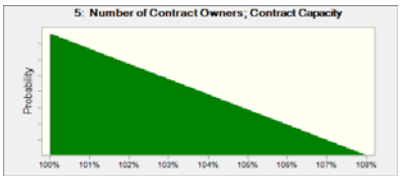
Minimum	100%
Likeliest	100%
Maximum	108%



Assumption: 5: Number of Contract Owners; Contract Capacity **Cell: E14**

Triangular distribution with parameters:

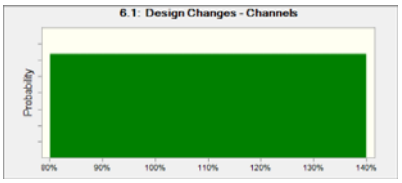
Minimum	100%
Likeliest	100%
Maximum	108%



Assumption: 6.1: Design Changes - Channels **Cell: E16**

Uniform distribution with parameters:

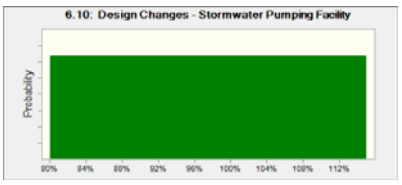
Minimum	80%
Maximum	140%



Assumption: 6.10: Design Changes - Stormwater Pumping Facility **Cell: E25**

Uniform distribution with parameters:

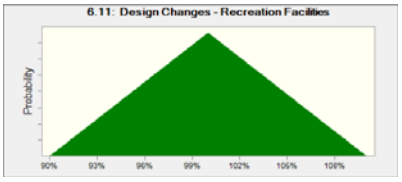
Minimum	80%
Maximum	115%



Assumption: 6.11: Design Changes - Recreation Facilities **Cell: E26**

Triangular distribution with parameters:

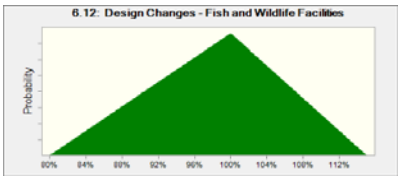
Minimum	90%
Likeliest	100%
Maximum	110%



Assumption: 6.12: Design Changes - Fish and Wildlife Facilities **Cell: E27**

Triangular distribution with parameters:

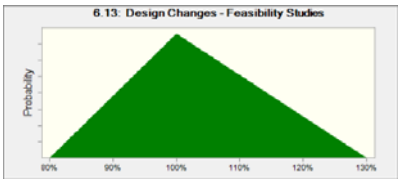
Minimum	80%
Likeliest	100%
Maximum	115%



Assumption: 6.13: Design Changes - Feasibility Studies **Cell: E28**

Triangular distribution with parameters:

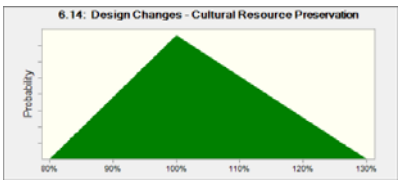
Minimum	80%
Likeliest	100%
Maximum	130%



Assumption: 6.14: Design Changes - Cultural Resource Preservation **Cell: E29**

Triangular distribution with parameters:

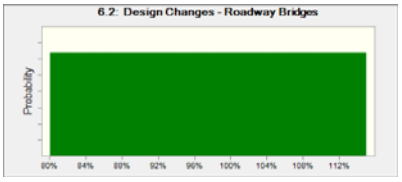
Minimum	80%
Likeliest	100%
Maximum	130%



Assumption: 6.2: Design Changes - Roadway Bridges **Cell: E17**

Uniform distribution with parameters:

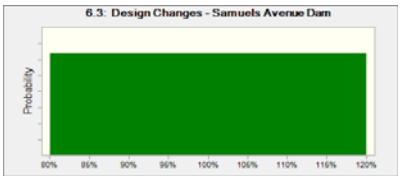
Minimum	80%
Maximum	115%



Assumption: 6.3: Design Changes - Samuels Avenue Dam **Cell: E18**

Uniform distribution with parameters:

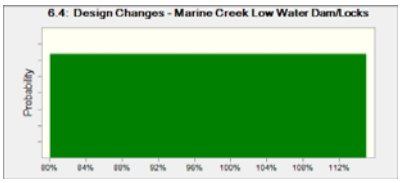
Minimum	80%
Maximum	120%



Assumption: 6.4: Design Changes - Marine Creek Low Water Dam/Locks **Cell: E19**

Uniform distribution with parameters:

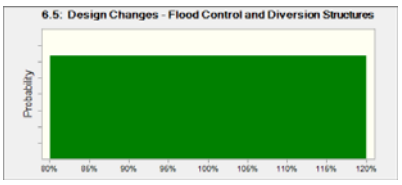
Minimum	80%
Maximum	115%



Assumption: 6.5: Design Changes - Flood Control and Diversion Structures **Cell: E20**

Uniform distribution with parameters:

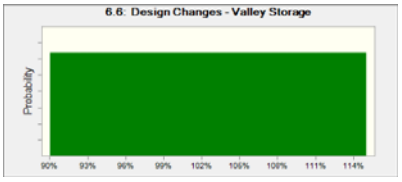
Minimum	80%
Maximum	120%



Assumption: 6.6: Design Changes - Valley Storage **Cell: E21**

Uniform distribution with parameters:

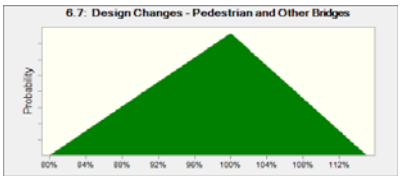
Minimum	90%
Maximum	115%



Assumption: 6.7: Design Changes - Pedestrian and Other Bridges **Cell: E22**

Triangular distribution with parameters:

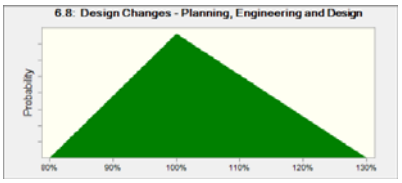
Minimum	80%
Likeliest	100%
Maximum	115%



Assumption: 6.8: Design Changes - Planning, Engineering and Design **Cell: E23**

Triangular distribution with parameters:

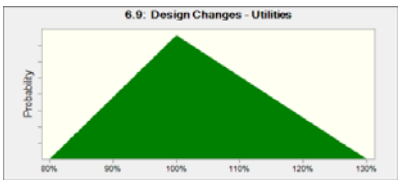
Minimum	80%
Likeliest	100%
Maximum	130%



Assumption: 6.9: Design Changes - Utilities **Cell: E24**

Triangular distribution with parameters:

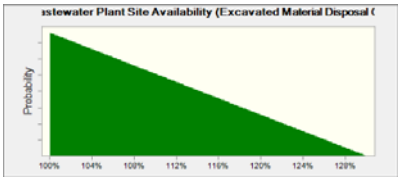
Minimum	80%
Likeliest	100%
Maximum	130%



Assumption: 7: Wastewater Plant Site Availability (Excavated Material Disposal Costs) **Cell: E30**

Triangular distribution with parameters:

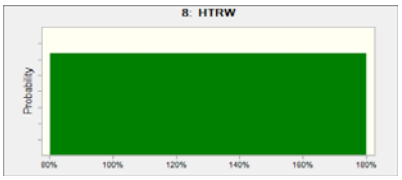
Minimum	100%
Likeliest	100%
Maximum	130%



Assumption: 8: HTRW **Cell: E31**

Uniform distribution with parameters:

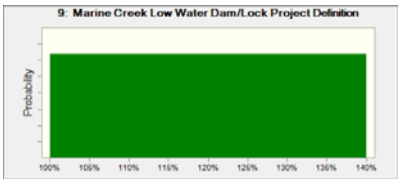
Minimum	80%
Maximum	180%



Assumption: 9: Marine Creek Low Water Dam/Lock Project Definition **Cell: E32**

Uniform distribution with parameters:

Minimum	100%
Maximum	140%



End of Assumptions

Appendix D
Cost Contingency Simulation Report

Crystal Ball Report - Full
Simulation started on 3/31/2008 at 15:16:03
Simulation stopped on 3/31/2008 at 15:29:45

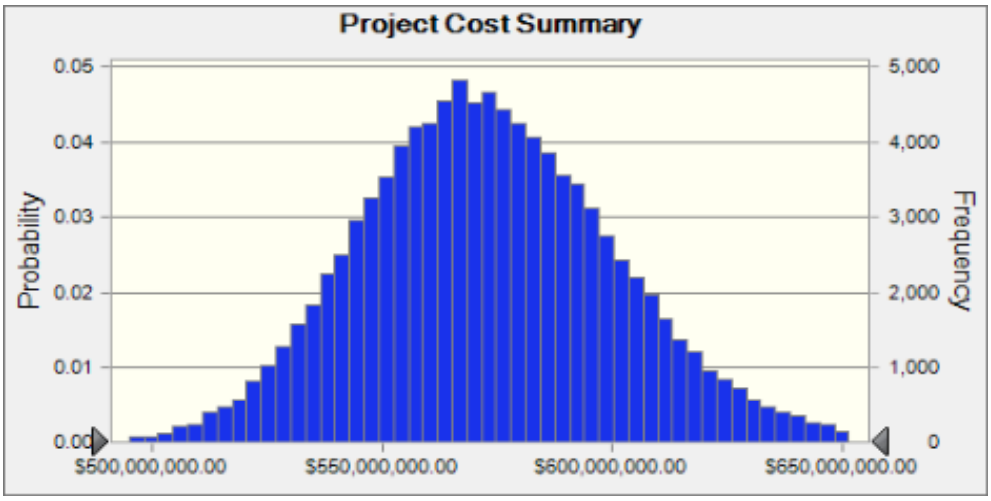
Run preferences:	
Number of trials run	100,000
Monte Carlo	
Random seed	
Precision control on	
Confidence level	95.00%
Run statistics:	
Total running time (sec)	822.41
Trials/second (average)	122
Random numbers per sec	4,621
Crystal Ball data:	
Assumptions	38
Correlations	0
Correlated groups	0
Decision variables	0
Forecasts	51

Forecasts

Worksheet: [FWCC Cost Risk Analysis.xls]Crystal Ball Forecasts

Forecast: Project Cost Summary **Cell: C5**

Summary:
Entire range is from $467,794,905.34 to $716,281,925.90
Base case is $506,743,627.18
After 100,000 trials, the std. error of the mean is $88,403.61



Statistics:	Forecast values
Trials	100,000
Mean	$573,094,049.50
Median	$571,831,792.53
Mode	---
Standard Deviation	$27,955,676.80
Variance	$781,519,865,105,582.00
Skewness	0.2681
Kurtosis	3.16
Coeff. of Variability	0.0488
Minimum	$467,794,905.34
Maximum	$716,281,925.90
Range Width	$248,487,020.56
Mean Std. Error	$88,403.61

Forecast: Project Cost Summary (cont'd) **Cell: C5**

Percentiles:	Forecast values
0%	$467,794,905.34
10%	$538,169,116.83
20%	$549,395,026.56
30%	$557,717,759.66
40%	$564,976,142.44
50%	$571,831,680.63
60%	$578,897,983.00
70%	$586,827,731.43
80%	$596,111,405.04
90%	$609,352,258.89
100%	$716,281,925.90

End of Forecasts

Assumptions

Worksheet: [FWCC Cost Risk Analysis.xls]Risk Impact Table

Assumption: 1.1: Craft Labor Cost **Cell: E6**

Lognormal distribution with parameters:

Mean	102%
Std. Dev.	12%

Selected range is from 88% to Infinity

Assumption: 1.2: General Material Cost **Cell: E7**

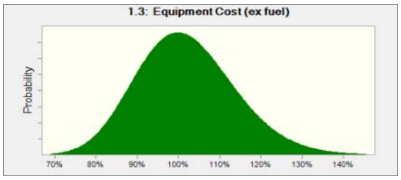
Lognormal distribution with parameters:

Mean	100%
Std. Dev.	5%

Assumption: 1.3: Equipment Cost (ex fuel) **Cell: E8**

Lognormal distribution with parameters:

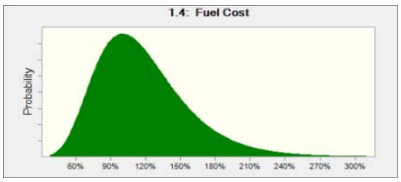
Mean	102%
Std. Dev.	12%



Assumption: 1.4: Fuel Cost **Cell: E9**

Lognormal distribution with parameters:

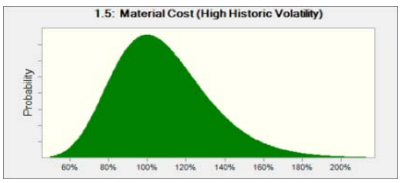
Mean	118%
Std. Dev.	40%



Assumption: 1.5: Material Cost (High Historic Volatility) **Cell: E10**

Lognormal distribution with parameters:

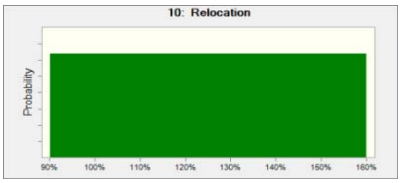
Mean	108%
Std. Dev.	25%



Assumption: 10: Relocation **Cell: E33**

Uniform distribution with parameters:

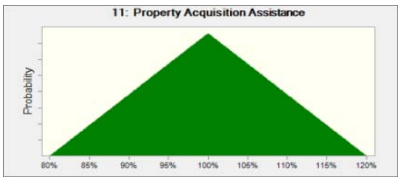
Minimum	90%
Maximum	160%



Assumption: 11: Property Acquisition Assistance **Cell: E34**

Triangular distribution with parameters:

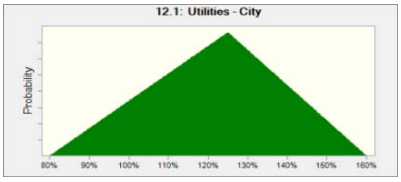
Minimum	80%
Likeliest	100%
Maximum	120%



Assumption: 12.1: Utilities - City **Cell: E36**

Triangular distribution with parameters:

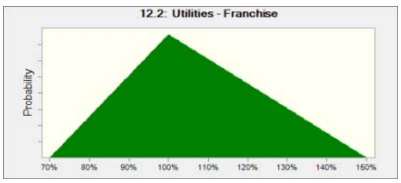
Minimum	80%
Likeliest	125%
Maximum	160%



Assumption: 12.2: Utilities - Franchise **Cell: E37**

Triangular distribution with parameters:

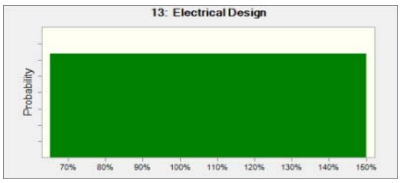
Minimum	70%
Likeliest	100%
Maximum	150%



Assumption: 13: Electrical Design **Cell: E38**

Uniform distribution with parameters:

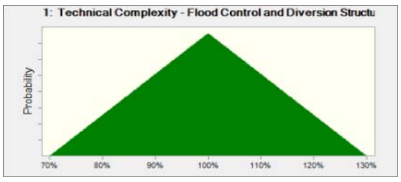
Minimum	65%
Maximum	150%



Assumption: 14.1: Technical Complexity - Flood Control and Diversion Structures **Cell: E40**

Triangular distribution with parameters:

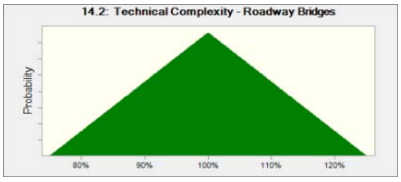
Minimum	70%
Likeliest	100%
Maximum	130%



Assumption: 14.2: Technical Complexity - Roadway Bridges **Cell: E41**

Triangular distribution with parameters:

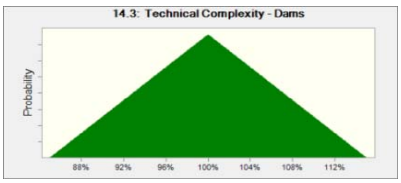
Minimum	75%
Likeliest	100%
Maximum	125%



Assumption: 14.3: Technical Complexity - Dams **Cell: E42**

Triangular distribution with parameters:

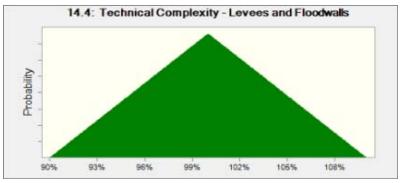
Minimum	85%
Likeliest	100%
Maximum	115%



Assumption: 14.4: Technical Complexity - Levees and Floodwalls **Cell: E43**

Triangular distribution with parameters:

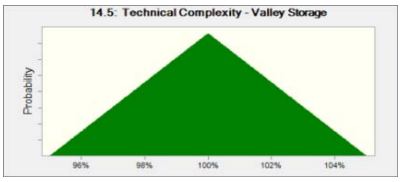
Minimum	90%
Likeliest	100%
Maximum	110%



Assumption: 14.5: Technical Complexity - Valley Storage **Cell: E44**

Triangular distribution with parameters:

Minimum	95%
Likeliest	100%
Maximum	105%



Assumption: 15: Contract Acquisition Strategy - Federal **Cell: E45**

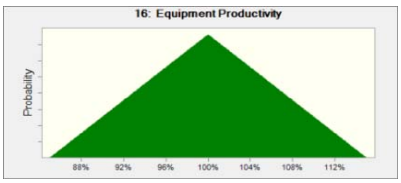
Triangular distribution with parameters:

Minimum	100%
Likeliest	100%
Maximum	110%

Assumption: 16: Equipment Productivity **Cell: E46**

Triangular distribution with parameters:

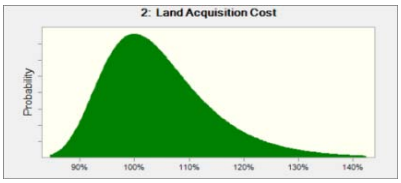
Minimum	85%
Likeliest	100%
Maximum	115%



Assumption: 2: Land Acquisition Cost **Cell: E11**

Maximum Extreme distribution with parameters:

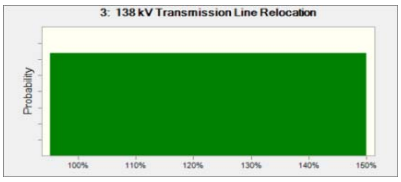
Likeliest	100%
Scale	8%



Assumption: 3: 138 kV Transmission Line Relocation **Cell: E12**

Uniform distribution with parameters:

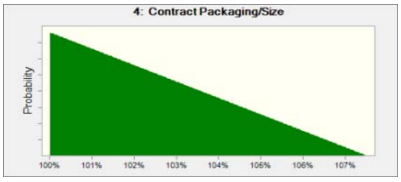
Minimum	95%
Maximum	150%



Assumption: 4: Contract Packaging/Size **Cell: E13**

Triangular distribution with parameters:

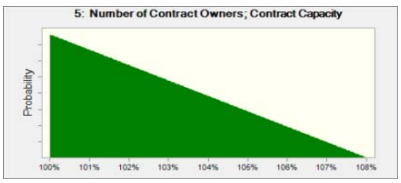
Minimum	100%
Likeliest	100%
Maximum	108%



Assumption: 5: Number of Contract Owners; Contract Capacity **Cell: E14**

Triangular distribution with parameters:

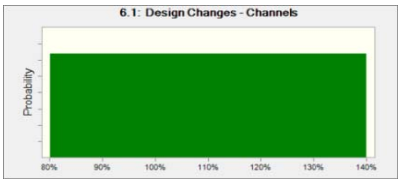
Minimum	100%
Likeliest	100%
Maximum	108%



Assumption: 6.1: Design Changes - Channels **Cell: E16**

Uniform distribution with parameters:

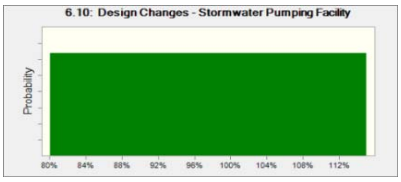
Minimum	80%
Maximum	140%



Assumption: 6.10: Design Changes - Stormwater Pumping Facility **Cell: E25**

Uniform distribution with parameters:

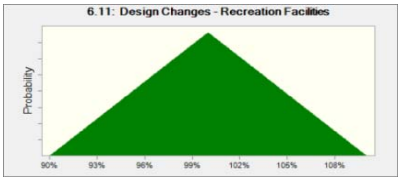
Minimum	80%
Maximum	115%



Assumption: 6.11: Design Changes - Recreation Facilities **Cell: E26**

Triangular distribution with parameters:

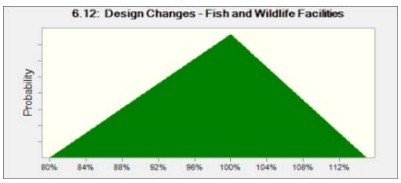
Minimum	90%
Likeliest	100%
Maximum	110%



Assumption: 6.12: Design Changes - Fish and Wildlife Facilities **Cell: E27**

Triangular distribution with parameters:

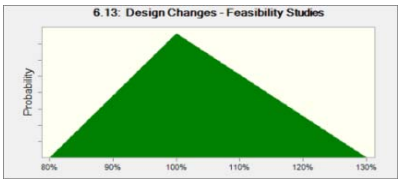
Minimum	80%
Likeliest	100%
Maximum	115%



Assumption: 6.13: Design Changes - Feasibility Studies **Cell: E28**

Triangular distribution with parameters:

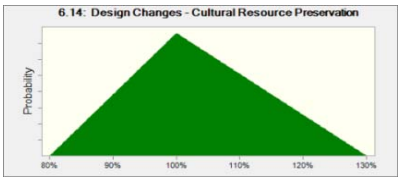
Minimum	80%
Likeliest	100%
Maximum	130%



Assumption: 6.14: Design Changes - Cultural Resource Preservation **Cell: E29**

Triangular distribution with parameters:

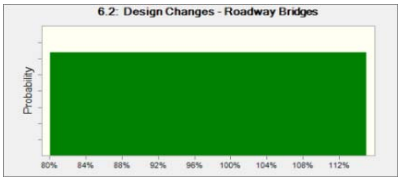
Minimum	80%
Likeliest	100%
Maximum	130%



Assumption: 6.2: Design Changes - Roadway Bridges **Cell: E17**

Uniform distribution with parameters:

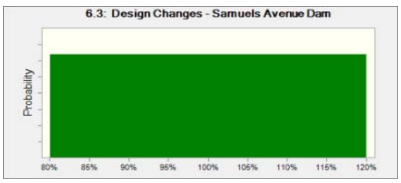
Minimum	80%
Maximum	115%



Assumption: 6.3: Design Changes - Samuels Avenue Dam **Cell: E18**

Uniform distribution with parameters:

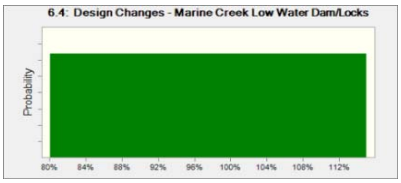
Minimum	80%
Maximum	120%



Assumption: 6.4: Design Changes - Marine Creek Low Water Dam/Locks **Cell: E19**

Uniform distribution with parameters:

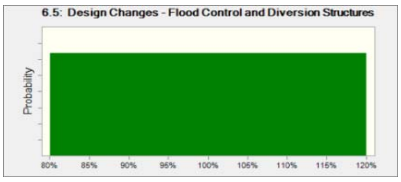
Minimum	80%
Maximum	115%



Assumption: 6.5: Design Changes - Flood Control and Diversion Structures **Cell: E20**

Uniform distribution with parameters:

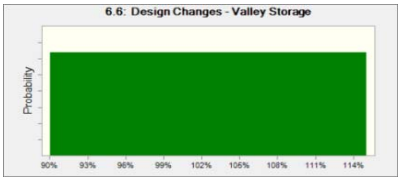
Minimum	80%
Maximum	120%



Assumption: 6.6: Design Changes - Valley Storage **Cell: E21**

Uniform distribution with parameters:

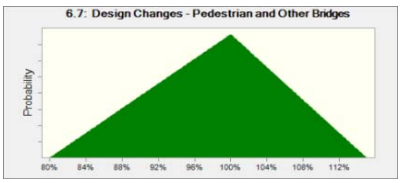
Minimum	90%
Maximum	115%



Assumption: 6.7: Design Changes - Pedestrian and Other Bridges **Cell: E22**

Triangular distribution with parameters:

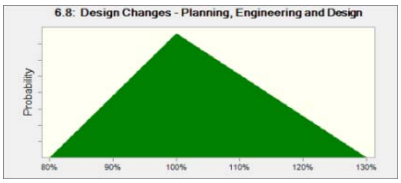
Minimum	80%
Likeliest	100%
Maximum	115%



Assumption: 6.8: Design Changes - Planning, Engineering and Design **Cell: E23**

Triangular distribution with parameters:

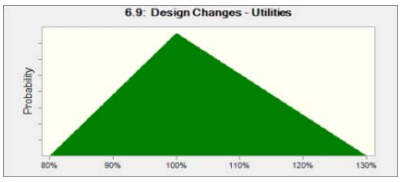
Minimum	80%
Likeliest	100%
Maximum	130%



Assumption: 6.9: Design Changes - Utilities **Cell: E24**

Triangular distribution with parameters:

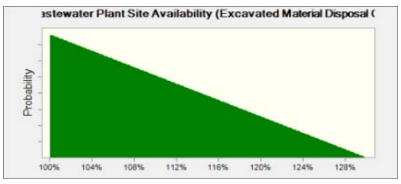
Minimum	80%
Likeliest	100%
Maximum	130%



Assumption: 7: Wastewater Plant Site Availability (Excavated Material Disposal Costs) **Cell: E30**

Triangular distribution with parameters:

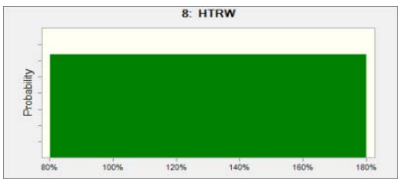
Minimum	100%
Likeliest	100%
Maximum	130%



Assumption: 8: HTRW **Cell: E31**

Uniform distribution with parameters:

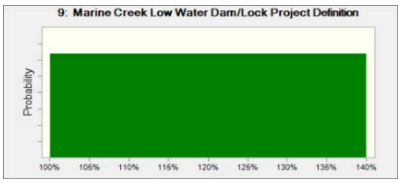
Minimum	80%
Maximum	180%



Assumption: 9: Marine Creek Low Water Dam/Lock Project Definition **Cell: E32**

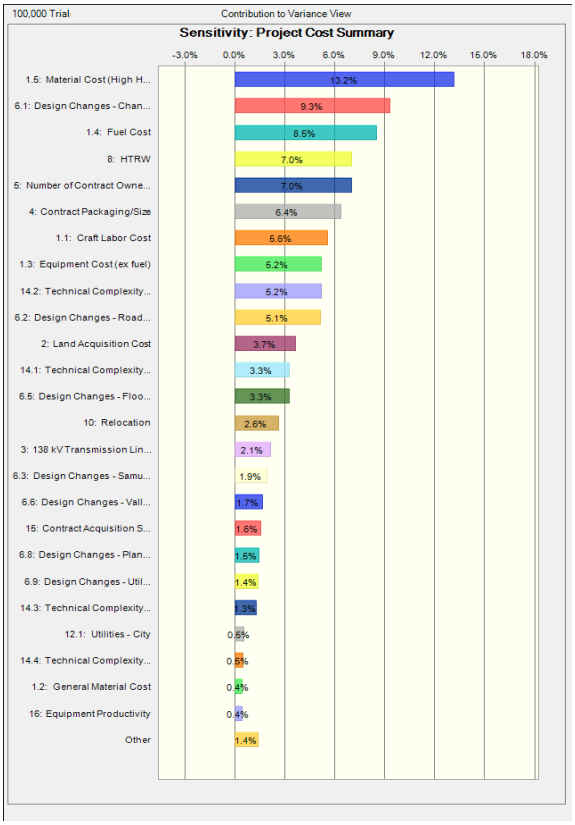
Uniform distribution with parameters:

Minimum	100%
Maximum	140%



End of Assumptions

Sensitivity Charts



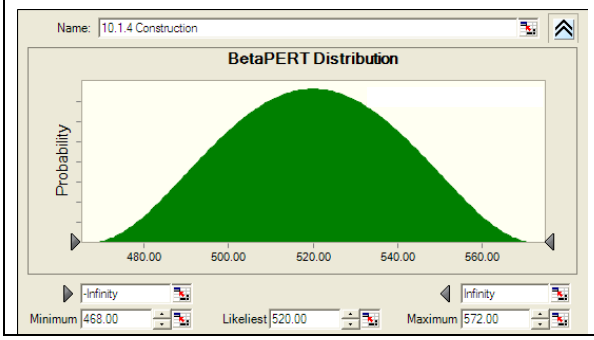
Appendix E
Schedule Critical Path Stress Tests

FWCC SCHEDULE SENSITIVITY ANALYSIS
Ten Percent Critical Path Stress Test*

WBS	Element	Task	Contribution to Variance	Deterministic Critical Path	Deterministic Slack (days)
10.1.4	Clear Fork Gate	Construction	40.7%	Yes	0
13.3	Interior Water Feature	Construction	22.6%	Yes	0
6.2.7	White Settlement Bridge & Roadway	Construct Bridge	16.0%	Yes	0
8.3.5	Upper (South) Channel	Tie-in Levee/Walls	9.7%	Yes	0
8.3.4	Upper (South) Channel	Retaining Walls	4.6%	Yes	0
6.2.4	White Settlement Bridge & Roadway	Relocate TXU 138 kV Overhead	3.6%	Yes	0
6.2.1	White Settlement Bridge & Roadway	Concept Selection & Development	1.5%	Yes	0
3.2.2	Roadway & Bridges -White Settlement	Acquisition	0.7%	Yes	0
3.2.1	Roadway & Bridges -White Settlement	Appraisals, Surveys, Engr., Legal	0.2%	Yes	0
6.4.2	White Settlement Extension and Bridge	R-O-W Dedication	0.1%	Yes	0
All Other Tasks			0.2%	N/A	N/A

*All schedule tasks assumed to have plus/minus ten percent duration uncertainty based on a BetaPERT distribution.

Example:



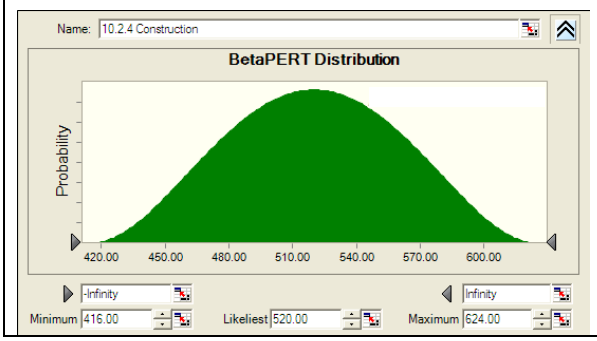
Monte Carlo Simulation Results		
Deterministic Finish Date:		8/16/2018
Confidence Level	Finish Date	Contingency (work days)
80%	10/8/2018	38.0

FWCC SCHEDULE SENSITIVITY ANALYSIS
Twenty Percent Critical Path Stress Test*

WBS	Element	Task	Contribution to Variance	Deterministic Critical Path	Deterministic Slack (days)
10.1.4	Clear Fork Gate	Construction	35.2%	Yes	0
13.3	Interior Water Feature	Construction	24.8%	Yes	0
6.2.7	White Settlement Bridge & Roadway	Construct Bridge	15.0%	Yes	0
8.3.5	Upper (South) Channel	Tie-in Levee/Walls	8.7%	Yes	0
8.3.4	Upper (South) Channel	Retaining Walls	4.5%	Yes	0
6.2.4	White Settlement Bridge & Roadway	Relocate TXU 138 kV Overhead	3.4%	Yes	0
6.3.6	Main Street - Bridge	Construct Bridge	2.1%	No	83
6.2.1	White Settlement Bridge & Roadway	Concept Selection & Development	1.3%	Yes	0
10.3.4	West Fork Gate	Construction	0.9%	No	83
3.2.2	Roadway & Bridges -White Settlement	Acquisition	0.8%	Yes	0
8.2.4	Lower (North) Channel	Retaining Walls	0.7%	No	83
6.3.1	Main Street - Bridge	Concept Selection & Development	0.7%	No	83
8.2.5	Lower (North) Channel	Tie-in Levee/Walls	0.6%	No	83
6.3.2	Main Street - Bridge	Design	0.5%	No	83
13.4	Interior Water Feature	CM	0.2%	No	83
10.2.4	TRWD Gate	Construction	0.1%	No	88
6.3.3	Main Street - Bridge	Review TxDOT	0.1%	No	83
3.2.1	Roadway & Bridges -White Settlement	Appraisals, Surveys, Engr., Legal	0.1%	Yes	0
6.4.2	White Settlement Extension and Bridge	R-O-W Dedication	0.1%	Yes	0
All Other Tasks			0.2%	N/A	N/A

*All schedule tasks assumed to have plus/minus twenty percent duration uncertainty based on a BetaPERT distribution.

Example:



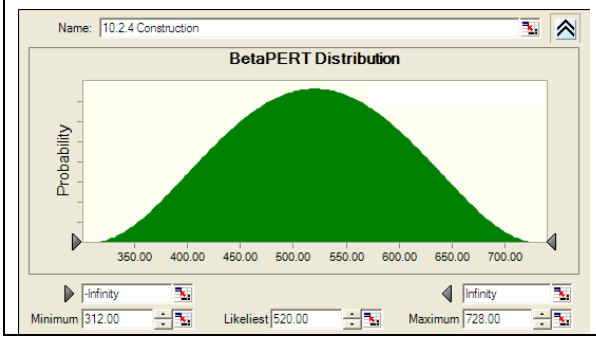
Monte Carlo Simulation Results		
Deterministic Finish Date:		8/16/2018
Confidence Level	Finish Date	Contingency (work days)
80%	12/12/2018	85.0

FWCC SCHEDULE SENSITIVITY ANALYSIS
Forty Percent Critical Path Stress Test*

WBS	Element	Task	Contribution to Variance	Deterministic Critical Path	Deterministic Slack (days)
13.3	Interior Water Feature	Construction	25.2%	Yes	0
10.1.4	Clear Fork Gate	Construction	24.8%	Yes	0
6.2.7	White Settlement Bridge & Roadway	Construct Bridge	12.5%	Yes	0
6.3.6	Main Street - Bridge	Construct Bridge	9.0%	No	83
8.3.5	Upper (South) Channel	Tie-in Levee/Walls	5.9%	Yes	0
8.3.4	Upper (South) Channel	Retaining Walls	3.7%	Yes	0
10.3.4	West Fork Gate	Construction	3.3%	No	83
6.2.4	White Settlement Bridge & Roadway	Relocate TXU 138 kV Overhead	3.0%	Yes	0
8.2.4	Lower (North) Channel	Retaining Walls	2.5%	No	83
8.2.5	Lower (North) Channel	Tie-in Levee/Walls	2.1%	No	83
6.3.2	Main Street - Bridge	Design	1.9%	No	83
6.3.1	Main Street - Bridge	Concept Selection & Development	1.5%	No	83
6.2.1	White Settlement Bridge & Roadway	Concept Selection & Development	1.1%	Yes	0
13.4	Interior Water Feature	CM	0.9%	No	83
10.2.4	TRWD Gate	Construction	0.9%	No	88
3.2.2	Roadway & Bridges -White Settlement	Acquisition	0.6%	Yes	0
6.3.3	Main Street - Bridge	Review TxDOT	0.4%	No	83
6.3.4	Main Street - Bridge	Procurement	0.2%	No	83
3.2.1	Roadway & Bridges -White Settlement	Appraisals, Surveys, Engr., Legal	0.1%	Yes	0
6.4.2	White Settlement Extension and Bridge	R-O-W Dedication	0.1%	Yes	0
6.3.5	Main Street - Bridge	Construct Temporary Detour	0.1%	No	83
All Other Tasks			0.2%	N/A	N/A

*All schedule tasks assumed to have plus/minus forty percent duration uncertainty based on a BetaPERT distribution.

Example:



Monte Carlo Simulation Results		
Deterministic Finish Date:		8/16/2018
Confidence Level	Finish Date	Contingency (work days)
80%	5/20/2019	198.0

Appendix F
Schedule Risk Factor Probability Distributions

Crystal Ball Report - Assumptions
Simulation started on 4/2/2008 at 20:29:09
Simulation stopped on 4/2/2008 at 20:35:54

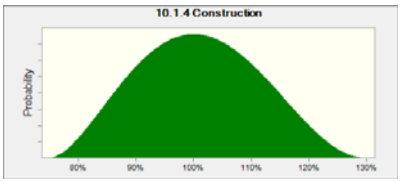
Assumptions

Worksheet: [FWCC Schedule Risk Model.xls]Risk Impact Table

Assumption: 10.1.4 Construction **Cell: E22**

BetaPERT distribution with parameters:

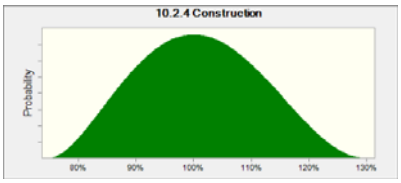
Minimum	75%
Likeliest	100%
Maximum	130%



Assumption: 10.2.4 Construction **Cell: E23**

BetaPERT distribution with parameters:

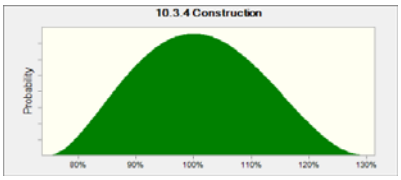
Minimum	75%
Likeliest	100%
Maximum	130%



Assumption: 10.3.4 Construction **Cell: E24**

BetaPERT distribution with parameters:

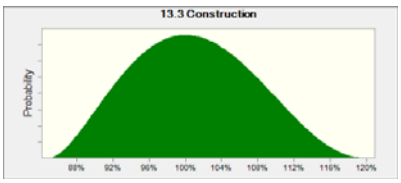
Minimum	75%
Likeliest	100%
Maximum	130%



Assumption: 13.3 Construction **Cell: E25**

BetaPERT distribution with parameters:

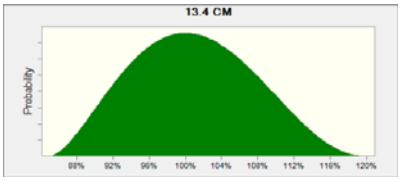
Minimum	85%
Likeliest	100%
Maximum	120%



Assumption: 13.4 CM **Cell: E26**

BetaPERT distribution with parameters:

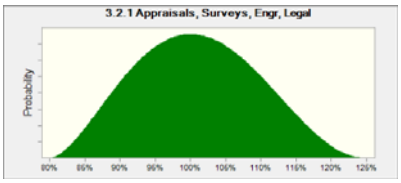
Minimum	85%
Likeliest	100%
Maximum	120%



Assumption: 3.2.1 Appraisals, Surveys, Engr, Legal **Cell: E6**

BetaPERT distribution with parameters:

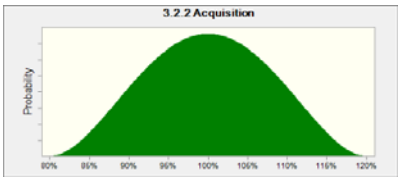
Minimum	80%
Likeliest	100%
Maximum	125%



Assumption: 3.2.2 Acquisition **Cell: E7**

BetaPERT distribution with parameters:

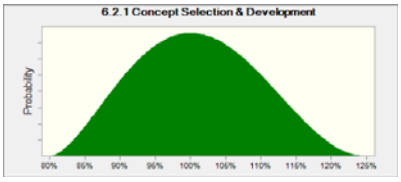
Minimum	80%
Likeliest	100%
Maximum	120%



Assumption: 6.2.1 Concept Selection & Development **Cell: E8**

BetaPERT distribution with parameters:

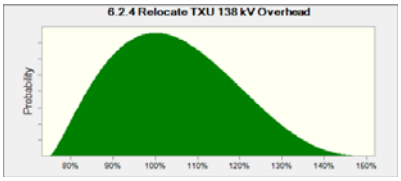
Minimum	80%
Likeliest	100%
Maximum	125%



Assumption: 6.2.4 Relocate TXU 138 kV Overhead **Cell: E9**

BetaPERT distribution with parameters:

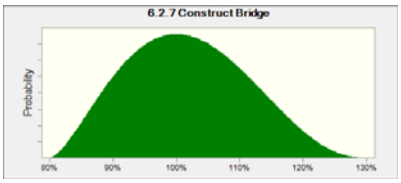
Minimum	75%
Likeliest	100%
Maximum	150%



Assumption: 6.2.7 Construct Bridge **Cell: E10**

BetaPERT distribution with parameters:

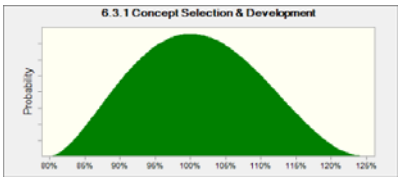
Minimum	80%
Likeliest	100%
Maximum	130%



Assumption: 6.3.1 Concept Selection & Development **Cell: E11**

BetaPERT distribution with parameters:

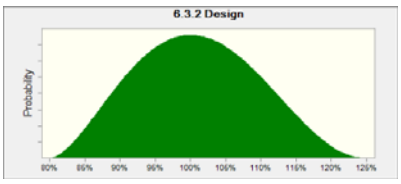
Minimum	80%
Likeliest	100%
Maximum	125%



Assumption: 6.3.2 Design **Cell: E12**

BetaPERT distribution with parameters:

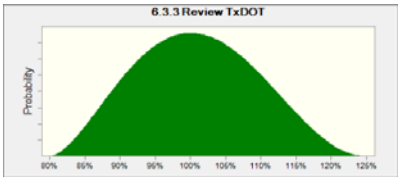
Minimum	80%
Likeliest	100%
Maximum	125%



Assumption: 6.3.3 Review TxDOT **Cell: E13**

BetaPERT distribution with parameters:

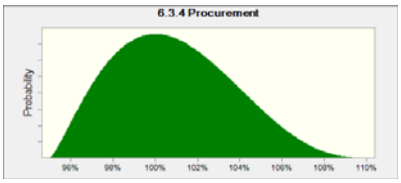
Minimum	80%
Likeliest	100%
Maximum	125%



Assumption: 6.3.4 Procurement **Cell: E14**

BetaPERT distribution with parameters:

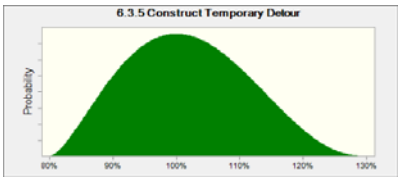
Minimum	95%
Likeliest	100%
Maximum	110%



Assumption: 6.3.5 Construct Temporary Detour **Cell: E15**

BetaPERT distribution with parameters:

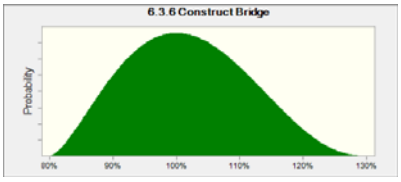
Minimum	80%
Likeliest	100%
Maximum	130%



Assumption: 6.3.6 Construct Bridge **Cell: E16**

BetaPERT distribution with parameters:

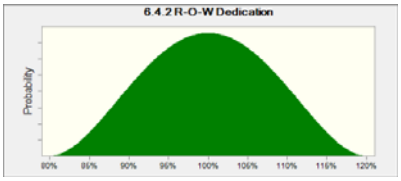
Minimum	80%
Likeliest	100%
Maximum	130%



Assumption: 6.4.2 R-O-W Dedication **Cell: E17**

BetaPERT distribution with parameters:

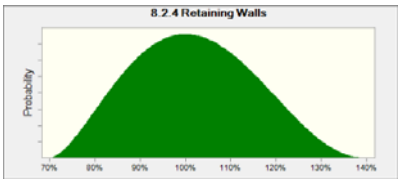
Minimum	80%
Likeliest	100%
Maximum	120%



Assumption: 8.2.4 Retaining Walls **Cell: E18**

BetaPERT distribution with parameters:

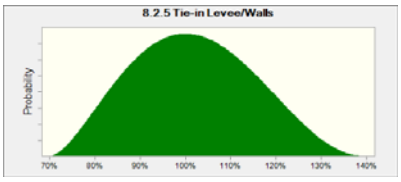
Minimum	70%
Likeliest	100%
Maximum	140%



Assumption: 8.2.5 Tie-in Levee/Walls **Cell: E19**

BetaPERT distribution with parameters:

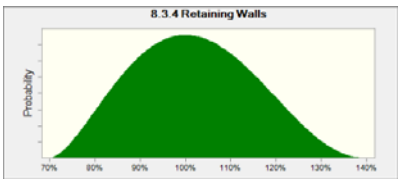
Minimum	70%
Likeliest	100%
Maximum	140%



Assumption: 8.3.4 Retaining Walls **Cell: E20**

BetaPERT distribution with parameters:

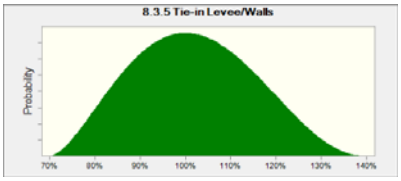
Minimum	70%
Likeliest	100%
Maximum	140%



Assumption: 8.3.5 Tie-in Levee/Walls **Cell: E21**

BetaPERT distribution with parameters:

Minimum	70%
Likeliest	100%
Maximum	140%



End of Assumptions

Appendix G
Schedule Contingency Simulation Report

Crystal Ball Report - Full
Simulation started on 4/2/2008 at 20:29:09
Simulation stopped on 4/2/2008 at 20:35:54

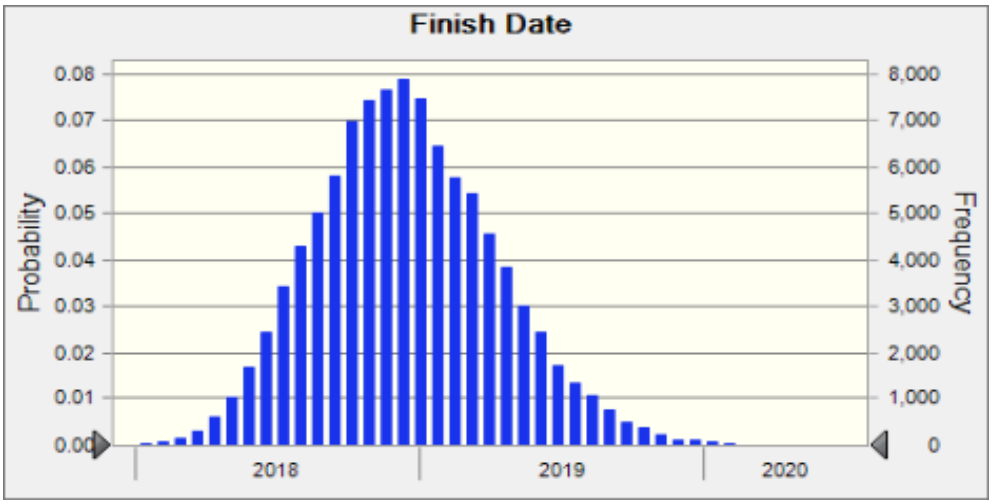
Run preferences:	
Number of trials run	100,000
Monte Carlo	
Random seed	
Precision control on	
Confidence level	95.00%
Run statistics:	
Total running time (sec)	404.77
Trials/second (average)	247
Random numbers per sec	5,188
Crystal Ball data:	
Assumptions	21
Correlations	0
Correlated groups	0
Decision variables	0
Forecasts	1

Forecasts

Worksheet: [FWCC Schedule Risk Model.xls]Schedule Risk Model

Forecast: Finish Date **Cell: F5**

Summary:
Entire range is from 12/12/2017 to 7/15/2020
Base case is 8/16/2018
After 100,000 trials, the std. error of the mean is 12/30/1899



Statistics:	Forecast values
Trials	100,000
Mean	12/13/2018
Median	12/7/2018
Mode	11/13/2018
Standard Deviation	4/24/1900
Variance	7/9/1936
Skewness	0.3016
Kurtosis	3.08
Coeff. of Variability	0.0027
Minimum	12/12/2017
Maximum	7/15/2020
Range Width	8/3/1902
Mean Std. Error	1/0/1900

Forecast: Finish Date (cont'd) **Cell: F5**

Percentiles:	Forecast values
0%	12/12/2017
10%	7/20/2018
20%	9/5/2018
30%	10/9/2018
40%	11/8/2018
50%	12/7/2018
60%	1/7/2019
70%	2/7/2019
80%	3/19/2019
90%	5/14/2019
100%	7/15/2020

End of Forecasts

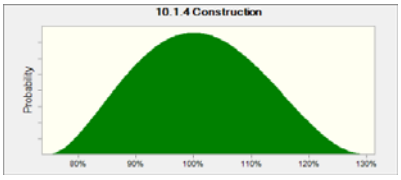
Assumptions

Worksheet: [FWCC Schedule Risk Model.xls]Risk Impact Table

Assumption: 10.1.4 Construction **Cell: E22**

BetaPERT distribution with parameters:

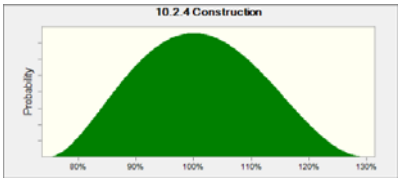
Minimum	75%
Likeliest	100%
Maximum	130%



Assumption: 10.2.4 Construction **Cell: E23**

BetaPERT distribution with parameters:

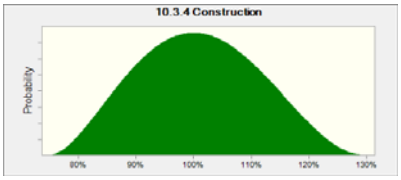
Minimum	75%
Likeliest	100%
Maximum	130%



Assumption: 10.3.4 Construction **Cell: E24**

BetaPERT distribution with parameters:

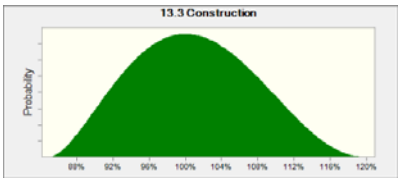
Minimum	75%
Likeliest	100%
Maximum	130%



Assumption: 13.3 Construction **Cell: E25**

BetaPERT distribution with parameters:

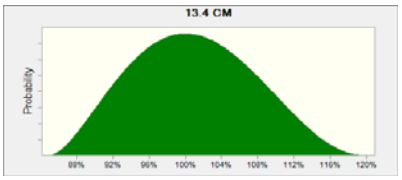
Minimum	85%
Likeliest	100%
Maximum	120%



Assumption: 13.4 CM **Cell: E26**

BetaPERT distribution with parameters:

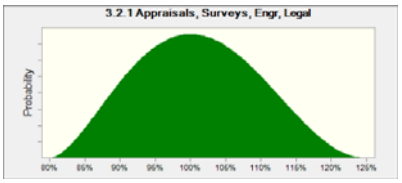
Minimum	85%
Likeliest	100%
Maximum	120%



Assumption: 3.2.1 Appraisals, Surveys, Engr, Legal **Cell: E6**

BetaPERT distribution with parameters:

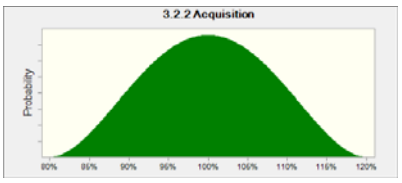
Minimum	80%
Likeliest	100%
Maximum	125%



Assumption: 3.2.2 Acquisition **Cell: E7**

BetaPERT distribution with parameters:

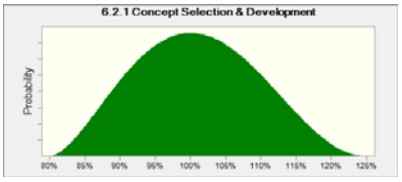
Minimum	80%
Likeliest	100%
Maximum	120%



Assumption: 6.2.1 Concept Selection & Development **Cell: E8**

BetaPERT distribution with parameters:

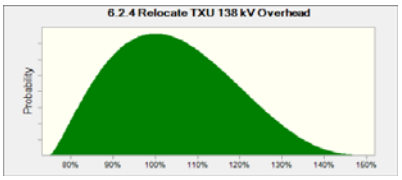
Minimum	80%
Likeliest	100%
Maximum	125%



Assumption: 6.2.4 Relocate TXU 138 kV Overhead **Cell: E9**

BetaPERT distribution with parameters:

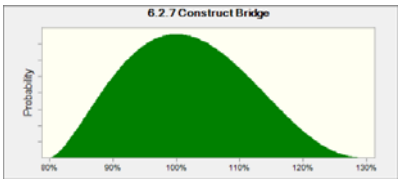
Minimum	75%
Likeliest	100%
Maximum	150%



Assumption: 6.2.7 Construct Bridge **Cell: E10**

BetaPERT distribution with parameters:

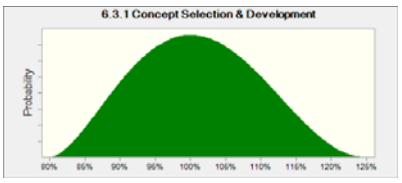
Minimum	80%
Likeliest	100%
Maximum	130%



Assumption: 6.3.1 Concept Selection & Development **Cell: E11**

BetaPERT distribution with parameters:

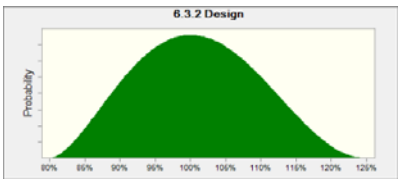
Minimum	80%
Likeliest	100%
Maximum	125%



Assumption: 6.3.2 Design **Cell: E12**

BetaPERT distribution with parameters:

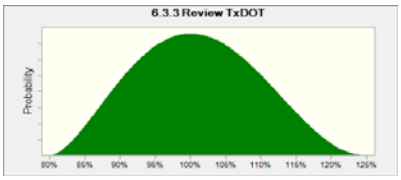
Minimum	80%
Likeliest	100%
Maximum	125%



Assumption: 6.3.3 Review TxDOT **Cell: E13**

BetaPERT distribution with parameters:

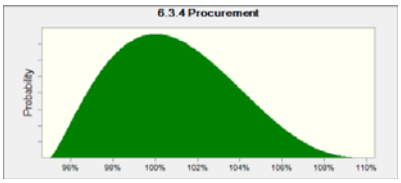
Minimum	80%
Likeliest	100%
Maximum	125%



Assumption: 6.3.4 Procurement **Cell: E14**

BetaPERT distribution with parameters:

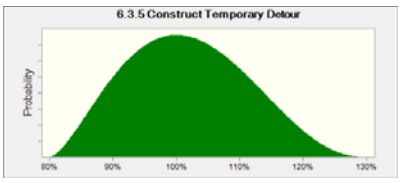
Minimum	95%
Likeliest	100%
Maximum	110%



Assumption: 6.3.5 Construct Temporary Detour **Cell: E15**

BetaPERT distribution with parameters:

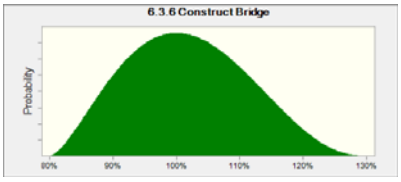
Minimum	80%
Likeliest	100%
Maximum	130%



Assumption: 6.3.6 Construct Bridge **Cell: E16**

BetaPERT distribution with parameters:

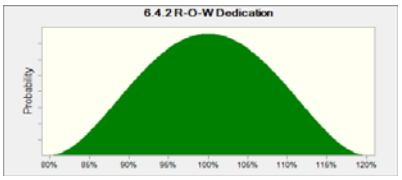
Minimum	80%
Likeliest	100%
Maximum	130%



Assumption: 6.4.2 R-O-W Dedication **Cell: E17**

BetaPERT distribution with parameters:

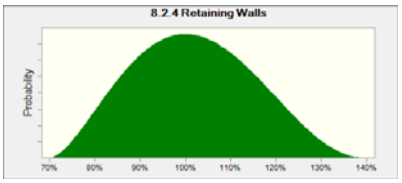
Minimum	80%
Likeliest	100%
Maximum	120%



Assumption: 8.2.4 Retaining Walls **Cell: E18**

BetaPERT distribution with parameters:

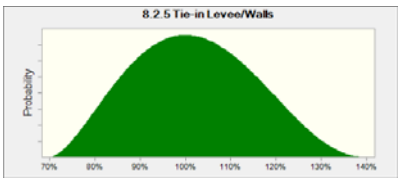
Minimum	70%
Likeliest	100%
Maximum	140%



Assumption: 8.2.5 Tie-in Levee/Walls **Cell: E19**

BetaPERT distribution with parameters:

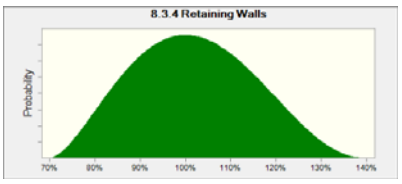
Minimum	70%
Likeliest	100%
Maximum	140%



Assumption: 8.3.4 Retaining Walls **Cell: E20**

BetaPERT distribution with parameters:

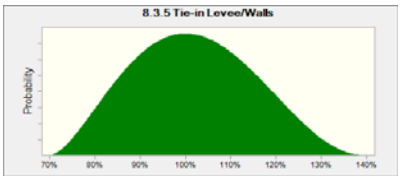
Minimum	70%
Likeliest	100%
Maximum	140%



Assumption: 8.3.5 Tie-in Levee/Walls **Cell: E21**

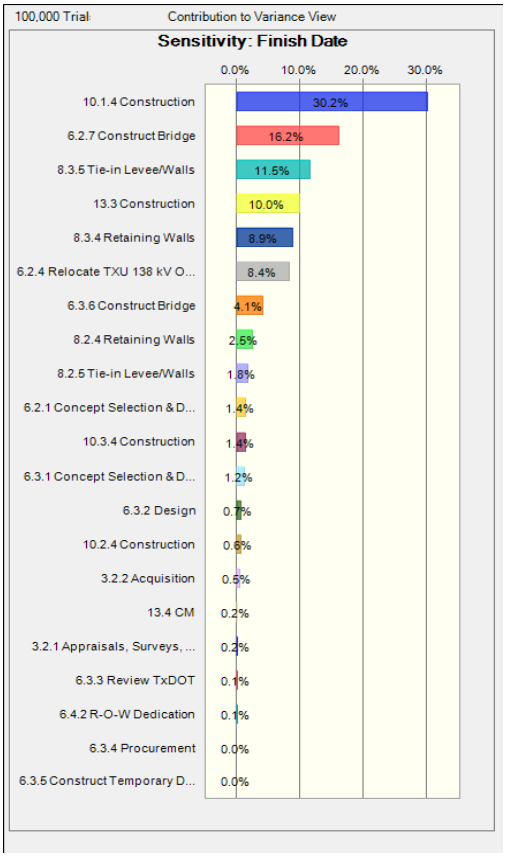
BetaPERT distribution with parameters:

Minimum	70%
Likeliest	100%
Maximum	140%



End of Assumptions

Sensitivity Charts



End of Sensitivity Data

Fort Worth Central City

Escalation to 2007

Fort Worth Central City - Preliminary Design

Estimated by	Nick Agnew, CDM
Designed by	
Prepared by	Marc Schlebusch, CDM
Preparation Date	3/31/2008
Effective Date of Pricing	10/31/2007
Estimated Construction Time	2,600 Days

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Library Properties ..... **i**
Project Notes ..... **ii**
Markup Properties ..... **xii**
Project Cost Summary Report **1**
1 01 Federal 220 ..... **1**
1.1 01 Lands and Damages **1**
1.1.1 10 Property Acquisition 1
1.1.2 15 Property Relocations 1
1.2 03 Reservoirs **1**
1.2.1 05 Valley Storage 1
1.3 06 Fish and Wildlife Facilities **1**
1.3.1 15 Ham Branch 2
1.4 11 Levees and Floodwalls **2**
1.4.1 Bypass Channel - North 2
1.4.2 Bypass Channel - South 2
1.5 15 Flood Control and Diversion Structures **2**
1.5.1 05 Clear Fork 2
1.5.2 15 TRWD 2
1.6 18 Cultural Resource Preservation **2**
1.7 30 Planning, Engineering, and Design **2**
1.8 31 Construction Management **2**
2 02 Non-Federal **3**
2.1 01 Lands and Damages **3**
2.1.1 05 Property Acquistion Assistance 3
2.1.2 10 Property Acquisition 3
2.1.3 15 Property Relocations 3
2.2 02 Relocations **3**
2.2.1 05 Mobilization and Demobilization 3
2.2.2 10 General Demolition and Site Preparation 3
2.2.3 15 Utility Relocation - Sanitary Sewer, Potable Water, Storm Sewer and Natural Gas 3
2.2.4 20 Utility Relocation - Electrical and Communication 3
2.2.5 25 Utility Relocation - Transmission Lines 3
2.3 04 Dams **3**
2.3.1 05 Samuels Avenue Dam 3
2.3.2 10 Marine Creek Low Water Dam/Lock 3
2.4 06 Fish and Wildlife Facilities **3**

2.4.1 10 Riverside Oxbow/Gateway 4
2.4.2 05 Rockwood Park 4
2.5 08 Roads, Railroads and Bridges 4
2.5.1 05 Henderson Bridge and Roadway 4
2.5.2 10 White Settlement Bridge and Roadway 4
2.5.3 15 Main Street Bridge and Roadway 4
2.5.4 20 White Settlement Extension Bridge and Roadway 4
2.5.5 25 Other Street Modifications 4
2.5.6 30 Riverside Oxbow Park 4
2.5.7 35 Riverside Gateway Park 4
2.5.8 40 Bypass Channel Pedesterian Bridges 4
2.6 13 Pumping Plants 4
2.6.1 05 Stormwater Pumping Facility 4
2.7 14 Recreation Facilities 4
2.7.1 05 Water Feature 5
2.7.2 10 Samuels Avenue 5
2.7.3 15 Marine Creek 5
2.7.4 20 Ham Branch 5
2.7.5 25 Riverside Park 5
2.7.6 30 Rockwood Park - West 5
2.7.7 35 Riverside Oxbow/Gateway Park 5
2.8 15 Flood Control and Diversion Structures 5
2.8.1 10 Trinity Point 5
2.9 30 Planning, Engineering, and Design 5
2.10 31 Construction Management 5
2.11 33 HTRW 5
2.11.1 Envrionmental Assessments 5
2.11.2 Site Remediation 5
2.11.3 Remediation Program Management 5
Contract Cost Summary Report 6
01 Federal 220 6
01 Lands and Damages 6
10 Property Acquisition 6
15 Property Relocations 6
03 Reservoirs 6
05 Valley Storage 6

06 Fish and Wildlife Facilities **6**
15 Ham Branch 6
11 Levees and Floodwalls **6**
Bypass Channel - North 6
Bypass Channel - South 6
15 Flood Control and Diversion Structures **6**
05 Clear Fork 6
15 TRWD 6
18 Cultural Resource Preservation **6**
30 Planning, Engineering, and Design **6**
31 Construction Management **6**
02 Non-Federal **6**
01 Lands and Damages **7**
05 Property Acquistion Assistance 7
10 Property Acquisition 7
15 Property Relocations 7
02 Relocations **7**
05 Mobilization and Demobilization 7
10 General Demolition and Site Preparation 7
15 Utility Relocation - Sanitary Sewer, Potable Water, Storm Sewer and Natural Gas 7
20 Utility Relocation - Electrical and Communication 7
25 Utility Relocation - Transmission Lines 7
04 Dams **7**
05 Samuels Avenue Dam 7
10 Marine Creek Low Water Dam/Lock 7
06 Fish and Wildlife Facilities **7**
10 Riverside Oxbow/Gateway 7
05 Rockwood Park 7
08 Roads, Railroads and Bridges **7**
05 Henderson Bridge and Roadway 7
10 White Settlement Bridge and Roadway 7
15 Main Street Bridge and Roadway 7
20 White Settlement Extension Bridge and Roadway 7
25 Other Street Modifications 8
30 Riverside Oxbow Park 8
35 Riverside Gateway Park 8

40 Bypass Channel Pedesterian Bridges 8
13 Pumping Plants 8
05 Stormwater Pumping Facility 8
14 Recreation Facilities 8
05 Water Feature 8
10 Samuels Avenue 8
15 Marine Creek 8
20 Ham Branch 8
25 Riverside Park 8
30 Rockwood Park - West 8
35 Riverside Oxbow/Gateway Park 8
15 Flood Control and Diversion Structures 8
10 Trinity Point 8
30 Planning, Engineering, and Design 8
31 Construction Management 8
33 HTRW 8
Envrionmental Assessments 8
Site Remediation 8
Remediation Program Management 9
Project Direct Costs Report 10
01 Federal 220 10
01 Lands and Damages 10
10 Property Acquisition 10
15 Property Relocations 10
03 Reservoirs 10
05 Valley Storage 11
05 Samuels Avenue Sites 11
Mobilization and Demobilization 11
Site Preparation 11
Excavation and Hauling 14
Fill Placement and Compaction 15
Drainage 16
Site Restoration 17
10 University Drive 17
Mobilization and Demobilization 18
Site Preparation 18

Fill Placement and Compaction 19
Site Restoration 20
Pavement, Sidewalks, Curbs, and Gutter 21
Retaining Wall 22
Drainage and Sewerage 23
Electrical 24
15 Ham Branch 24
Mobilization and Demobilization 25
Site Preparation 25
Excavation and Hauling 27
Fill Placement and Compaction 28
Site Restoration 28
Pavement, Sidewalks, Curbs, and Gutter 29
Retaining Walls 30
20 Riverside Park 30
Mobilization and Demobilization 31
Site Preparation 31
Excavation and Hauling 34
Fill Placement and Compaction 35
Site Restoration 36
Drainage 37
Electrical 37
25 Rockwood Park - West 38
Mobilization and Demobilization 39
Site Preparation 39
Excavation and Hauling 41
Fill Placement and Compaction 42
Site Restoration 43
30 Riverside Oxbow/Gateway 44
Riverside Oxbow 44
Mobilization and Demobilization 44
Site Preparation 45
Excavation and Hauling 47
Fill Placement and Compaction 50
Site Restoration 51
Pavement, Sidewalks, Curbs, and Gutter 51

Gateway 52
Mobilization and Demobilization 52
Site Preparation 52
Excavation and Hauling 54
Fill Placement and Compaction 56
Site Restoration 58
Drainage 58
06 Fish and Wildlife Facilities 59
15 Ham Branch 59
11 Levees and Floodwalls 61
Bypass Channel - North 62
Mobilization and Demobilization 62
Site Preparation 62
Excavation, Hauling, and Placement 62
Pavement, Sidewalks, Curbs, and Gutter 66
Retaining Walls 66
Lower Wall 66
Middle Wall 68
Upper Wall 70
Site Restoration 71
Bypass Channel - South 71
Mobilization and Demobilization 72
Site Preparation 72
Excavation, Hauling, and Placement 72
Pavement, Sidewalks, Curbs, and Gutter 75
Retaining Walls 76
Lower Wall 76
Middle Wall 78
Upper Wall 79
Site Restoration 81
15 Flood Control and Diversion Structures 81
05 Clear Fork 81
Mobilization and Demobilization 82
Site Preparation 82
Excavation, Hauling, and Placement 83
Pavement, Sidewalks, Curbs and Gutter 86

Training Walls 86
Mechanical 87
Finishes 87
Flood Control Structures 87
Electrical, Controls, and Instrumentation 88
Site Restoration 89
15 TRWD 89
Mobilization and Demobilization 89
Site Preparation 89
Excavation, Hauling, and Placement 91
Pavement, Sidewalks, Curbs and Gutter 93
Training Walls 93
Mechanical 94
Finishes 95
Flood Control Structures 95
Electrical, Controls, and Instrumentation 96
Site Restoration 96
18 Cultural Resource Preservation 96
30 Planning, Engineering, and Design 97
31 Construction Management 97
02 Non-Federal 97
01 Lands and Damages 97
05 Property Acquistion Assistance 98
10 Property Acquisition 98
15 Property Relocations 98
02 Relocations 98
05 Mobilization and Demobilization 98
10 General Demolition and Site Preparation 99
15 Utility Relocation - Sanitary Sewer, Potable Water, Storm Sewer and Natural Gas 99
Sanitary Sewer 99
Site Work 100
Piping and Appurtenances 100
Potable Water 102
Site Work 102
Piping and Appurtenances 102
Storm Sewer 103

Site Work 103
Outfall Collection System 103
Piping and Appurtenances 104
Natural Gas Distribution and Transmission 106
Site Work 106
Piping and Appurtenances 107
Equipment 107
20 Utility Relocation - Electrical and Communication 107
Site Work 107
Electrical 108
Electrical Distribution 108
Cable TV 109
Fiber Optic 110
Telephone 110
Miscellaneous 110
25 Utility Relocation - Transmission Lines 111
Site Work 111
Electrical 111
04 Dams 111
05 Samuels Avenue Dam 111
Mobilization and Demobilization 111
Site Preparation 112
Earthwork 114
Pavement, Sidewalks, Curbs and Gutter 115
Retaining Walls 115
Finishes 116
Flood Control Structures 116
Buildings 117
Electrical 118
10 Marine Creek Low Water Dam/Lock 120
Mobilization and Demobilization 120
Site Preparation 120
Earthwork 121
Retaining Walls 122
Flood Control Structures 124
Electrical 124

06 Fish and Wildlife Facilities **124**
10 Riverside Oxbow/Gateway 125
Mobilization and Demobilization 125
Earthwork 125
05 Rockwood Park 126
Mobilization and Demobilization 126
Earthwork 126
Site Restoration 126
08 Roads, Railroads and Bridges **127**
05 Henderson Bridge and Roadway 127
Mobilization and Demobilization 127
Earthwork 128
Pavement, Sidewalks, Curbs, and Gutter 130
Drainage 132
Bridges 132
10 White Settlement Bridge and Roadway 133
Mobilization and Demobilization 134
Earthwork 134
Pavement, Sidewalks, Curbs, and Gutter 136
Drainage 138
Bridges 139
15 Main Street Bridge and Roadway 140
Mobilization and Demobilization 140
Earthwork 140
Pavement, Sidewalks, Curbs, and Gutter 141
Drainage 142
Bridges 143
20 White Settlement Extension Bridge and Roadway 144
Mobilization and Demobilization 144
Earthwork 144
Pavement, Sidewalks, Curbs, and Gutter 145
Drainage 146
Bridges 147
25 Other Street Modifications 148
Mobilization and Demobilization 148
Pavement, Sidewalks, Curbs, and Gutter 148

Drainage 149
Electrical 150
30 Riverside Oxbow Park 150
Mobilization and Demobilization 150
Site Preparation 150
Pavement, Sidewalks, Curbs, and Gutter 151
Bridges 154
Park Road Bridge 154
Beach Street Bridge 157
35 Riverside Gateway Park 160
Mobilization and Demobilization 161
Pavement, Sidewalks, Curbs, and Gutter 161
40 Bypass Channel Pedesterian Bridges 162
Mobilization and Demobilization 162
Bridges 162
13 Pumping Plants 163
05 Stormwater Pumping Facility 163
Mobilization and Demobilization 163
Earthwork 163
Buildings 164
Masonary 164
Metals 165
Thermal and Moisture 166
Finishes 167
Equipment 167
Electrical, Controls, and Instrumentation 167
Concrete Footings, Slabs, and Retaining Walls 168
Pavement, Sidewalks, Curbs, and Gutter 168
Drainage 169
Site Restoration 169
14 Recreation Facilities 170
05 Water Feature 170
Mobilization and Demobilization 170
Earthwork 170
Retaining Walls 171
Mechanical 172

Electrical, Controls, and Instrumentation 172
Site Restoration 172
10 Samuels Avenue 172
Mobilization and Demobilization 172
Earthwork 172
Pavement, Sidewalks, Curbs, and Gutter 173
15 Marine Creek 173
Mobilization and Demobilization 173
Site Preparation 174
Earthwork 174
Pavement, Sidewalks, Curbs, and Gutter 175
Retaining Walls 175
Electrical, Controls, and Instrumentation 175
Site Restoration 175
Bridges 176
20 Ham Branch 176
Mobilization and Demobilization 176
Earthwork 176
Pavement, Sidewalks, Curbs, and Gutter 177
25 Riverside Park 177
Mobilization and Demobilization 177
Earthwork 177
Pavement, Sidewalks, Curbs, and Gutter 178
Electrical, Controls, and Instrumentation 178
30 Rockwood Park - West 179
Mobilization and Demobilization 179
Pavement, Sidewalks, Curbs, and Gutter 179
Earthwork 179
35 Riverside Oxbow/Gateway Park 179
Riverside Oxbow 180
Mobilization and Demobilization 180
Earthwork 180
Pavement, Sidewalks, Curbs, and Gutter 181
Bridges 181
Recreation Amenities 182
Electrical, Controls, and Instrumentation 182

Drainage 182
Mechanical 183
Gateway Park 184
Mobilization and Demobilization 184
Site Preparation 184
Earthwork 185
Buildings 185
15 Flood Control and Diversion Structures 185
10 Trinity Point 185
Mobilization and Demobilization 186
Site Preparation 186
Excavation, Hauling, and Placement 187
Pavement, Sidewalks, Curbs and Gutter 189
Training Walls 189
Mechanical 190
Finishes 190
Flood Control Structures 191
Electrical, Controls, and Instrumentation 191
Site Restoration 192
30 Planning, Engineering, and Design 192
31 Construction Management 193
33 HTRW 193
Envrionmental Assessments 193
Site Remediation 194
Remediation Program Management 195

Designed by

Estimated by
Nick Agnew, CDM

Prepared by
Marc Schlebusch, CDM

Design Document

Document Date	1/31/2005
District	Fort Worth
Contact	Saji Alummuttil
Budget Year	2008
UOM System	Original

Direct Costs
LaborCost
EQCost
MatlCost
SubBidCost

Timeline/Currency

Preparation Date	3/31/2008
Escalation Date	9/30/2007
Eff. Pricing Date	10/31/2007
Estimated Duration	2600 Day(s)
Currency	US dollars
Exchange Rate	1.000000

Costbook CB06EB: MII English Cost Book 2006

Labor LB06NatFD: Labor National 2006
Note: http://www.wdol.gov/

Labor Rates
LaborCost1
LaborCost2
LaborCost3
LaborCost4

Equipment EP03R06: MII Equipment Region 6 2005
Note: Area factors updated with Region 6 2007 area and shipping factors.

06 SOUTHWEST

Sales Tax	0.00
Working Hours per Year	1,590
Labor Adjustment Factor	0.91
Cost of Money	4.75
Cost of Money Discount	25.00
Tire Recap Cost Factor	1.50
Tire Recap Wear Factor	1.80
Tire Repair Factor	0.15
Equipment Cost Factor	1.00
Standby Depreciation Factor	0.50

Fuel

Electricity	0.100
Gas	3.150
Diesel Off-Road	2.681
Diesel On-Road	3.192

Shipping Rates

Over 0 CWT	14.74
Over 240 CWT	14.51
Over 300 CWT	12.25
Over 400 CWT	10.94
Over 500 CWT	5.87
Over 700 CWT	5.39
Over 800 CWT	4.17

Date	Author	Note
3/31/2008	Schlebusch	1.0 PROJECT BACKGROUND The Central City Project is located within the vicinity of the downtown area of Fort Worth, Texas, along the West Fork and Clear Fork of the Trinity River and consists of a bypass channel, levee system, and associated improvements to divert flood flows around a segment of the existing floodway system. The original project estimate was prepared in January 2005 using Micro Computer Aided Cost Engineering System (MCACES) for Windows (MFW) software and subsequently updated in April 2005 based upon U. S. Army Corps of Engineers (USACE) comments. A Final Environmental Impact Statement (FEIS) was completed for the Central City Project in January 2006 and the Project Report was completed in March 2006. The Record of Decision (ROD) was signed, and the Project Report recommending the Community-Based Alternative was endorsed as being technically sound and environmentally acceptable, by the Assistant Secretary Army (ASA) for Civil Works (CW) on 7 April 2006. Section 116 of Public Law 108-447, dated 8 December 2004, authorized USACE's participation in construction of the Central City Project. Within that specific authorization, a subset which can be constructed by the USACE and the local sponsor, identified as the USACE's project, was defined at $110,000,000 federal cost and a $220,000,000 total project cost. The non-federal sponsor is the Tarrant Regional Water District (TRWD) and the City of Fort Worth is one of the local partners. These entities are also sponsors for the Riverside Oxbow Ecosystem Restoration Project. An Interim Feasibility Report and Integrated Environmental Assessment were completed in April 2003 for the Riverside Oxbow Project. The cost estimate, MCACES dated April 2003, was prepared as part of the Riverside Oxbow Feasibility Study. A Finding of No Significant Impact (FONSI) was signed by the Acting Fort Worth District Commander on 22 May 2003. On 29 May 2003 the recommended Plan for the Riverside Oxbow was approved by the Chief of Engineers. By letter dated 22 June 2006, the City of Fort Worth requested that the USACE's conduct an evaluation of the potential benefits of modifying the Central City Project to incorporate the Riverside Oxbow Ecosystem Restoration project area to accommodate valley storage requirements. In response to that letter request, the USACE's initial evaluation suggested the concept merited additional study which resulted in the preparation of a Supplemental EIS and supporting Technical Appendices. The following is a brief summary of each of the categories and work elements. Additional detail can be found in the Upper Trinity River Central City FEIS, Appendix C- Volume I Report and Volume II Plans dated January 2005 and in Supplement No.1 to the Final Environmental Impact Statement, Appendix C- Volume I Report and Volume II Supplemental Plans dated August 2007. 2.0 WORK ELEMENTS The cost estimate is formatted to be consistent with the Civil Works Breakdown Structure (CWBS). Using the CWBS the project has been segregated into fifteen (15) categories. Categories are further divided into additional sub-elements as appropriate to provide additional information and detail to individual items. Features of the modified Central City Project were developed by assessing the elements from two previous studies to determine the benefits merging certain elements. For this estimate features, quantities, construction approaches and plans were obtained largely from these prior studies with appropriate additions and deletions as required by the Modified Plan. 2.1 LAND (01) 2.1.1 ASSUMPTIONS This category includes costs associated with the acquisition of property for the project. The costs were tabulated by the major work element for which it will be acquired and property acquisition assistance costs. The four (4) major work elements are: bypass channel, water feature, valley storage (Riverside/Gateway and Marine Creek. The costs associated with each element of work were determined after review of the mass appraisals performed by James K. Norwood, Certified Real Estate Appraiser. Appraisals were performed on the Central City Project on behalf of the Tarrant Regional Water District and at the Riverside Oxbow/Gateway on behalf of the USACE. Estimated costs in this estimate are based on the best known information at the time of the estimate and may vary from the amounts in the Norwood appraisals given modifications in the project footprint. Costs were normalized to the baseline 2007 by factors provided by the Real Estate Division USACE Fort Worth District. A factor of 6% per year was used for land values and a 15% flat rate was used for administrative fees. Property acquisition assistance costs are included for consulting fees, legal assistance, and other permitting, subordinated fees, licenses that will be incurred as part of the land acquisition activity. These costs are for additional analysis, planning, acquisition documents and proceedings including any additional appraisals and possible condemnation proceedings. Base cost for these assistance cost was estimated at 13% of the Property Acquisition Cost and allocated at 5.2% Consulting, 5.2% Legal, and 2.6% Permitting & Licensing. A contingency was not been provided on these costs as they are considered separate consulting costs. Landowner relocation costs were provided by a separate independent relocation study. This category includes anticipated costs for the relocation and moving of current property

Date Author Note

owners and tenants on the affected property. Costs for relocations of persons and businesses under this section are based on the report prepared by Pinnacle Consulting Management Group, Inc dated February 2, 2005. Costs were adjusted to baseline 2007 cost utilizing factors provided by Pinnacle Group of 4% compounded annually.

2.1.2 REFERENCES
James K. Norwood, Central City Trinity River Project (Bypass Channel), Updated Mass Appraisal, Phase I Real Property Acquisition, 16 November 2004

_____, Central City Trinity River Project (Interior Water Feature), Updated Mass Appraisal, Phase II Real Property Acquisition, 7 September 2004

_____, Central City Trinity River Project (Valley Storage), Updated Mass Appraisal, Phase III Real Property Acquisition, 9 December 2004

_____, Central City Trinity River Project (Marine Creek), Updated Mass Appraisal, Phase IV Real Property Acquisition, 9 December 2004

Pinnacle Consulting, Relocation Needs Assessment, 2 February 2005

_____, Property and Relocation Escalation Factors, Email dated 7 February 2008

2.2 RELOCATION (02)

2.2.1 ASSUMPTIONS
Utility relocations are required for the construction of the project. A variety of utility lines including sewers, storm sewers, water mains, gas mains, electrical and cable will need to be relocated and/or demolished. Existing utilities were contacted, maps obtained and impacted utilities identified. City and franchise utility owners were contacted regarding location and costs for major relocations. Cost for the relocation of the 138 kilovolt (kV) transmission line provided by TXU Electric. Construction Costs for these items have been included in this section.

This section also includes the demolition of structures and paving in the bypass channel and the water feature areas. Approximately 1,583,575 square feet of light industrial buildings will be demolished. The average building height was assumed to be 20 feet tall with 7.5% of building volume requiring disposal. Concrete paving was assumed to be 8-inch thick with approximately 48,780 square yards required for removal. Asphalt paving was assumed to be 6-inch thick with approximately 127,800 square yards of material removal. It is the intent of the local sponsors to develop a recycling and reuse plan to reduce landfill waste. Concrete debris may be used as armor in non-visible areas or crushed and used as fill during site construction. Demolition debris that cannot be recycled or reused beneficially will be hauled to the City of Fort Worth construction debris landfill on Bennen Avenue or the TRWD disposal area. There will be no disposal fees associated with construction debris disposed at either facility.

2.2.2 REFERENCES
Internal CDM Memorandum, Bypass Channel Building Demo Memorandum, 15 April 2005.

TXU Energy Service Quote for Relocating 138 kVA Line, Email dated 14 January 2005.

2.3 RESERVOIRS (03)

2.3.1 ASSUMPTIONS
Samuels Avenue and University Drive are the two original locations which were identified for Valley Storage improvements. The Supplemental EIS added the Rockwood West, Ham Branch, Riverside Park, and the Riverside Oxbow/Gateways sites. Demolition of minor structures inherent to construction activities will be conducted as needed. It is the intent of the

Date Author Note

local sponsors to develop a recycling and reuse plan to reduce landfill waste. Demolition debris will be recycled or reused beneficially to reduce costs to the extent practicable. Demolition debris that cannot otherwise be used onsite will be hauled to the City of Fort Worth construction debris landfill on Bennen Avenue or the TRWD disposal area. There will be no disposal fees associated with construction debris disposed at either facility. Site improvements include removing unnecessary structures, site grading to allow for more valley storage and construction of new levees. In addition, new flood control structures, seeding and utility replacements are included in the expected costs. The University Drive site primarily consists of roadway and grade modifications/improvements. Borrow material required for University Drive site will be imported from the bypass channel and valley storage sites. For each of the Valley Storage excavation sites spoils/disposal areas were identified for haul-off of excavated materials. For major sites such as Riverside/Gateway, where haul routes incorporate public roadways, allowances were provided for street sweeping and restoration.

2.3.2 REFERENCES
Internal CDM Memorandum, Proposed Valley Storage Haul Routes for Modified Project,
9 November 2007.

2.4 DAMS (04)

2.4.1 ASSUMPTIONS
Downstream of the bypass channel a new dam structure will be constructed on the West Fork Trinity River. The dam will consist of seven (7) leaf gates placed into a concrete support structure. Three (3) sluice gates will also be provided in the bottom of the dam to assist in the control of upstream water levels. The concrete structure will have a maintenance access bridge to provide maintenance access to the leaf gates on the top of the dam and will be supported on a series of drilled shafts anchored in a bedrock foundation. A sheet piling system is proposed as a positive cut-off for seepage and as part of the construction sequencing plan.

A low water fixed broad crest weir dam is proposed on Marine Creek in near proximity to the Samuels Avenue Dam. The dam will be constructed of roller compacted concrete with a cast-in-place concrete cap on all portions above the stilling basin. Driven sheet piling will be used for seepage cut-off. A small lock structure for pleasure boats is proposed for connectivity between the Marine Creek and Samuels Dam impoundments. The lock will be a reinforced concrete structure with miter gates.

2.4.2 REFERENCES
General Electric Hydro Quote, Dam and Isolation Gates, 21 May 2004.

Rodney Hunt Quote, Locks, 2007.

2.5 FISH AND WILDLIFE FACILITIES (06)

2.5.1 ASSUMPTIONS
Fish and wildlife facilities include costs to restore and improve the various habitats at several valley storage sites. The primary locations for ecosystem features are Rockwood Park, Ham Branch and Riverside Oxbow/Gateway. The improvements that are included are seeding (both normal Bermuda grass and grassland/wetlands) and tree plantings. Excavations included with the development of valley storage capacity include the opening of the old Sycamore Creek Oxbow and excavation of the old Riverside Oxbow. In addition, 50,000 cubic yards of earthwork is included at the Rockwood site for the restoration of an existing oxbow. Costs for Ecosystem development including Riparian Forest, Wetlands, and Grasslands were prepared by the Environmental Branch USACE Fort Worth District.

2.5.2 REFERENCES
USACE – Fort Worth District, 18 November 2005.

2.6 ROADS AND BRIDGES (08)

2.6.1 ASSUMPTIONS
A. Henderson Bridge and Roadway

Date Author Note

Henderson Bridge will be a 6 lane standard bridge approximately 700 feet long with 10 feet wide concrete walks on both sides. Elevated embankments will lead up to the bridge on both sides of the future channel. The embankments will be supported by concrete retaining walls. The roadways will be constructed of concrete and include street lighting, pavement marking and signage. Construction of the roadway will require a temporary roadway detour.

B. White Settlement Bridge and Roadway
White Settlement Bridge will be a 4 lane standard bridge approximately 735 feet long with 10 feet wide concrete walks on both sides. Elevated embankments will lead up to the bridge on both sides of the future channel. The embankments will be supported by concrete retaining walls. The roadways will be constructed of concrete and include street lighting, pavement marking and signage. Construction of the roadway will require a temporary roadway. Installation of the final traffic signal for the White Settlement and Henderson Street intersection are included under this task.

C. Main Street Bridge and Roadway
Main Street Bridge will be a 4 lane designer (cable stayed) bridge approximately 406 feet long with 10 feet wide concrete walks on both sides. Elevated embankments will lead up to the bridge on both sides of the future channel. The embankments will be supported by concrete retaining walls. The roadways will be constructed of concrete. The roadways will be constructed of concrete and include street lighting, pavement marking and signage. Construction of the roadway will require a roadway detour onto an existing roadway.

D. White Settlement at Water Feature Bridge and Roadway
The White Settlement Bridge will be a 4 lane standard bridge approximately 450 feet long with 10 feet wide concrete walks on both sides. The bridge will cross the expanded Water Feature Elevated embankments will lead up to the bridge on both sides of the future channel. The embankments will be supported by concrete retaining walls. The roadways will be constructed of concrete. The roadways will be constructed of concrete and include street lighting, pavement marking and signage.

E. Beech Street Bridge
The existing Beech Street Bridge will be replaced with a 4 lane standard bridge approximately 115 feet long supported on drilled shafts. Elevated embankments will lead up to the bridge on both sides of the existing old oxbow channel. The interior embankments will be lined with concrete slope protection. The roadways will be constructed of concrete and pavement markings and signage.

F. Park Roads and Bridge
Costs are provided for over 4950 feet of two lane park entrance and roadways, 48,060 square feet of parking and one two lane park road bridge 103 ft in length.

G. Other Street Modifications
Additional costs were provided to perform modifications to the various local streets that will be affected by the construction of the channel. These modifications include providing turnouts, dead ends and patching of existing roads and drainage system. A contingency of 20% was included on Road and Bridge costs.

2.6.2 REFERENCES
TCB Independent Quote for Bridges Based on Texas Department of Transportation Guidance.

Contech Bridge Solutions Quote for Riverside Oxbow Pedestrian Bridges, 3 October 2007.

USACE, Beach Street/Park Road Bridge Quantities, Riverside Feasibility Study for LPP, MCACES Cost Estimate dated 7 April 2003.

2.7 LEVEES AND FLOODWALLS (11)

2.7.1 ASSUMPTIONS
Bypass Channel construction was been broken into two separate areas; North and South. The channel will consist of an excavated center channel with a new earthen levee constructed on the west side of the channel and multi-level reinforced concrete floodwalls on the east side. Both sides of the channel will have recreational paths for pedestrian access. All excess excavation material will be stockpiled in the future development area for use during construction of the flood control gates, backfill behind the retaining walls and

Date Author Note

White Settlement roadway embankment. Two pedestrian crossings will be constructed across the new channel and the West Fork Trinity River (just prior to the intersection with the new channel). Both pedestrian crossings will be designed to act as water breaks during a flood event.

2.8 STORMWATER PUMPING FACILITY (13)

2.8 ASSUMPTIONS
A Stormwater Pumping Facility will be included in the project to maintain the water level inside the water feature area during high water period rainfall events on the West Fork. This facility will be located adjacent to the TRWD Gate and will be constructed at the same time as the gate structure. The facility will contain a total of four (4) 45,000 gallon per minute pumps and be constructed of a concrete wet well and a masonry building. An emergency generator will be shared with the TRWD gate structure. In addition, access and parking will be provided adjacent to the site.

2.9 RECREATION FACILITIES (14)

2.9.1 ASSUMPTIONS
A. Valley Storage Sites
For the Rockwood West, Samuels Avenue and Ham Branch Valley storage Sites the recreational facilities consist of the replacement of concrete trails.

B. Water Feature
A water feature will be constructed at the existing confluence of the West Fork Trinity River and the Clear Fork Trinity River. The Water Feature area will be constructed with concrete retaining walls and walks. Recirculation pumps and housings are also included in the estimate to assist in the circulation of water in the interior area. A preliminary design had not been developed at the time of the estimate.

C. Marine Creek
Modifications will be made to Marine Creek, upstream of Samuel Avenue Dam, in order to ensure that pedestrian access will be available once the dam is constructed and the water impoundment is created. The modifications include construction of concrete retaining walls and new walks, lighting, and pedestrian bridge.

D. Riverside Park
Costs include the reconstruction of existing parking and new entrance roads. Allowances are provided for new athletic fields lighting, or relocations depending upon the final design and park plan.

E. Riverside/Gateway Park
In addition to the hard and soft trail system and two pedestrian bridges a number of special construction items have been included. The design of these facilities has yet to be determined so these items are shown as standard unit cost from RS MEANS based upon approximate foot prints. These include a 1,000 square feet concession stand with restrooms, 1,500 square feet splash park, four covered basketball courts, and bleachers. Allowances for electrical service, and lighting are provided.

2.10 FLOOD CONTROL & DIVERSION STRUCTURES (15)

2.10.1 ASSUMPTIONS
Three (3) gate control structures (Clear Fork, Trinity Point and TRWD) will be constructed for the project. All three (3) structures will be constructed of concrete with battered foundation piles providing support to bedrock. The Clear Fork gate will also have a sheet pile cutoff wall. Each gate will have one large (24 feet x 17 feet) vertical roller gate and at least one small (12 feet x 10 feet) vertical roller gate (Trinity Point Gate - two). The large gate will be used for normal water control and boat access to the interior area, while the smaller gate(s) will be used to seal off pedestrian access during flooding conditions. Gates can be inspected when open through internal access areas. In addition, each gate will have an enclosed control room and instrumentation system for monitoring the gates. Budgetary information on gate construction and installation costs was provided by General Electric Hydro.

Date Author Note

2.10.2 REFERENCES
General Electric Hydro Quote, Dam and Isolation Gates, 21 May 2004.

2.11 CULTURAL RESOURCE PRESERVATION (18)

2.11.1 ASSUMPTIONS
These costs were determined by USACE in accordance with the requirements contained in the Programmatic Agreement between the USACE and Texas Historical Commission.

2.12 DESIGN SURVEY, TESTING AND LEGAL (21)

2.12.1 ASSUMPTIONS
This category includes anticipated costs for design survey, project control, geotechnical exploration and testing, independent construction materials testing and legal assistance fees. The costs are divided into two main tasks: 1) Design Survey and Testing and 2) Legal Fees. Costs under this category are based on a percentage of the total construction cost with contingency. Based on the complexity, magnitude, and duration of the project the costs have been assumed as approximately 1.3% for Design Survey and Testing services and 1.0% for Legal Fees for a total of 2.3% for this category. No contingency was included on these costs.

2.13 PLANNING, ENGINEERING & DESIGN (30)

2.13.1 ASSUMPTIONS
This category includes anticipated costs for design and permitting including but not limited to development of final designs, contract bid packages, cost estimation, engineering services during construction, environmental permitting, and permit fees. The costs are divided into two main tasks: 1) A/E Design Fees and 2) Permits, Fees, and Licenses. Costs under this category are based on a percentage of the total construction cost with contingency. Based on the complexity, magnitude, and duration of the project the costs have been assumed as approximately 5.0% for A/E Design Fees and 1.7% for Permits, Fees and Licenses for a total of 6.7% for this category. No contingency was included on these costs.

2.14 CONSTRUCTION MANAGEMENT (31)

2.14.1 ASSUMPTIONS
This category includes anticipated costs for program management and construction management.

A. Program Management
This category includes anticipated costs for program management services during the design and construction of the project. Program management services are anticipated, but not limited to be: Agency Coordination/Management, Standards Development, Maintenance of Project Records and Base Files, Funding/ Grants and Cost Accounting, Contract Procurement, Project Schedule Maintenance, and Closeout. Costs under this category are based on a percentage of the total construction cost with contingency. Based on the complexity, magnitude, and duration of the project the costs have been assumed as approximately 4.9% for this category. No contingency was included on these costs. Program management was not included in for the Federal portion of this work.

B. Construction Management
This category includes anticipated costs for construction management including but not limited to costs for: meetings (pre-con, progress, post-con), field coordination, inspection, survey control, contract modifications, payment request processing. Costs under this category are based on a percentage of the total construction cost with contingency. Based on the complexity, magnitude, and duration of the project the costs have been assumed as approximately 4.6% for this category. No contingency was included on these costs.

2.14 HTRW (33)

2.14.1 ASSUMPTIONS
The HTRW category includes costs for environmental services and remediation on the project and was developed based on the results of the environmental records review completed

Date	Author	Note
		for the potentially impacted properties during the initial EIS phase. For the Phase I and Phase II site assessments the following allowances were used: Update the Phase I EIS data, 173 parcels at an cost of $1,000/ site; Phase II site assessments assumed 106 sites at $9,200/site: soil and groundwater testing 1350 samples at $335/sample and 413 samples at $430/sample; asbestos surveys estimated at 50 building at $1,150/structure Environmental remediation costs for the project were developed primarily for the potentially impacted properties within the proposed bypass channel at each of the sites with records indicating potential release of petroleum or hazardous chemicals. Costs include, but are not limited to, the following: - Investigation of assumed contaminated sites; - Excavation and disposal of underground storage tanks (USTs) and accompanying contaminated soils; - Placement of short-term groundwater recovery/treatment systems at locations with leaking USTs (LUSTs)/USTs; - Excavation and disposal of assumed volumes of contaminated soil based on the number of databases that each site appears within; - Analytical costs for characterization of the contaminated soils for disposal and confirmation of complete removal; and - Engineering design fees and administrative costs for following required regulatory guidelines and submittal of appropriate reports to regulatory agencies. Asbestos abatement costs were calculated based on factoring the total square footage buildings to be removed to determine office type space within the total building footprint which would likely contain asbestos. Of the total of 1.5 million square feet of buildings to be demolished, 50 % is assumed to be finished and of that amount 20% was assumed to contain asbestos. Abatement unit price were then used from MEANS Environmental Remediation Book to determine the estimated asbestos abatement cost. The HTRW construction costs are based on the best available information at this time and will be updated and refined as design development is advanced and more information can be obtained within the project footprint. 2.14.2 REFERENCES Internal CDM Memorandum, Asbestos Abatement Estimate, 22 May 2005. Accutest Quote, Laboratory Testing, 5 September 2006. 3.0 ENVIRONMENTAL CONCERNS General environmental concerns (for example, sediment and erosion control) during construction will be addressed through better management practices (BMPs). Hazardous materials will be addressed through Phase I and II environmental assessments during property acquisition. Any properties that are in need of remediation will be addressed as described in Section 2.14 above. 4.0 ESTIMATED CONSTRUCTION DURATION: The project duration (for bond calculation purposes) is assumed to have a duration of approximately 10 years or 2,600 (working day is defined as an 8-hour day Monday through Friday excluding major holidays). It is assumed that actual project duration is approximately 240 months from notice to proceed (NTP). The NTP date and field mobilization date are unknown at this phase of the conceptual planning. The midpoint of the construction project has been estimated based on an assumed NTP date of 2008.
3/31/2008	Schlebusch	5.0 ESTIMATE PREPARATION: This cost estimate was prepared using the MCACES Second Generation software (MII). The following supporting databases were used in the preparation of the cost estimate: LB06NatFD (Labor National 2006), EP03R06 (MII Equipment Cost Book for Region 6 2005), and CB06EB (MII English Cost Book 2006). The quantities used in the estimate preparation were determined from the conceptual plans (drawings) for the work. This cost estimate assumes that all the necessary equipment, labor, and material will be available for the project because it is located in Fort Worth, Texas and near Dallas, Texas both of which are major metropolitan areas. The structure of the estimate is organized according to the CWBS in accordance with Engineer Regulation for Civil Works Cost Engineering (ER 1110-2-1302), 31 March 1994. The costs presented in this estimate are considered to have an accuracy range of +50/-30. All estimates are prepared by qualified estimating staff within the CDM Constructors division of CDM. During the estimating process an ongoing review of all work takes place as

Date Author Note

the estimate is being prepared. At the completion of all estimates, the Regional Chief Estimator performs a quality assurance review of the estimate, to verify that it is within the standard guidelines of CDM Constructors.

5.1 LABOR RATES:
This estimate is based on the latest available/supported MCACES MII labor rate database (LB06NatFD), which has been updated using the 31 August 2007 Davis Bacon Wage Determinations for the Fort Worth, Texas for the base and fringe rates. In addition, payroll taxes and insurance have been updated for each laborer using the following 2007 factors:

- Federal/State Unemployment Taxes: 6.17% (0.8% Federal/5.37% State)
- Social Security Taxes: 7.65%
- Workmen's Compensation: 10.29%

No overtime was assumed for this estimate.

5.2 EQUIPMENT RATES:
This estimate is based on the latest available/supported MCACES MII equipment rate database (EP03R06), which has been updated using the latest Region 6 (Texas) Area Factors, as provided in Appendix B of Engineering Pamphlet EP 1110-1-8, dated 31 July 2007. The Area Factors were further adjusted to account for current fuel costs (gasoline and diesel) at the time of estimate preparation and therefore the equipment rates used in the estimate more accurately represent current 2007 prices. The sales tax for this estimate was set at 0% because Texas state sales tax is exempt from government sponsored work.

5.3 CONTRACTORS/SUBCONTRACTORS:
The procurement plan for this project currently assumes the work will be performed by a minimum of 11 General Contractors:

GENERAL CONTRACTOR
Bridge and Roadway General Contractor – Henderson, Main, and White Settlement
Bridge and Roadway General Contractor – Beach Street
Bridge and Roadway General Contractor – White Settlement Extension and Bridge
Bypass Channel and Levees General Contractor
Isolation Gate General Contractor – Trinity Point
Isolation Gate General Contractor – Clear Fork and TRWD
Ham Branch Ecosystem General Contractor
Riverside Gateway General Contractor
Dam General Contractor
Valley Storage General Contractor
Environmental Remediation General Contractor

The estimate assumes that the following Subcontractors to the General Contractors:

SUBCONTRACTOR
Bridge and Roadway Subcontractor
Building Subcontractor
Concrete Subcontractor
Dam Subcontractor
Demolition Subcontractor
Drilling/Caisson Subcontractor
Electrical Subcontractor

Date Author Note

Electrical Utility Subcontractor
Environmental Remediation Subcontractor
Gate Control Structures Subcontractor
Hauling Subcontractor
Landscape Subcontractor
Mechanical Subcontractor
Transportation Subcontractor
Water and Sewer Utility Subcontractor

The following General Contractor overhead, profit, and bond markups are assumed:

Home Office Overhead (HOOH) = 3%
Field Office Overhead (JOOH) = 10%
Profit = 8%
Bond = 2.5%

For each of the subcontractors, the following subcontractor overhead,profit, and bond markups are assumed:
Home Office Overhead (HOOH) = 3%
Field Office Overhead (JOOH) = 2%
Profit = 8%
Bond = 2.5%

The General Contractor also applies their markups on work done by the subcontractor.

5.4 PROJECT OWNER MARKUPS:
The owner also has markups on the project level that are applied after contractor markups. These markups are included below.

The previous MCACES MFW estimates were prepared in 2005 dollars. The costs in the MII estimate are escalated to 10/31/2007 based on the Civil Works Construction Cost Index revised 09/30/2007. The effective date for the estimate is 10/31/2007. Project owner markups (escalation to midpoint of construction and contingency) beyond 2007 were not applied in the MCACES MII estimate but rather in a separate Total Project Summary table.

Escalation to midpoint and contingency were not applied within the MCACES MII estimate, but rather applied in the separate Total Project Summary table. A rate of 6% per year was used to escalate real estate costs for the project ot midpoint. The real estate escalation rate of 6% per year was provided by USACE and James K. Norwood, Certified Real Estate Appraiser. A rate of 3.5% per year was used to escalate construction costs for the project to midpoint. The 3.5% per year escalation rate was based on the Municipal Cost Index archive on the American City and County online publication using the indices from 2004 to 2008 for construction costs. Because of the duration and scheduling of the project different midpoints of construction were used for the major components of the work. The midpoints of construction are provided in the Total Project Summary table.

For the base estimate contingency was applied to lands and damages property acquisition and owner relocations and all construction features. Total project contingency was quantified using the August 2007 USACE Cost and Schedule Risk Analysis Process guidance and is based on Monte Carlo simulation of the cost estimate using Crystal Ball software. The cost risk analysis served to quantify contingency based on an eighty percent level of confidence and corresponds directly to the risk register prepared by the project delivery team. Total project contingency was quantitatively allocated to individual project features based on dollar-weighted relative risk as measured by the standard deviation of the feature-specific Crystal Ball forecast.

Government sponsored work is exempt from sales tax in the state of Texas.

Date	Author	Note

5.5 DETAIL COST SOURCES:
The MCACES MII supporting databases (labor, equipment, materials, and UPB) were used whenever possible for this cost estimate. Direct detail costs were derived using several sources of cost information. The following are the reference codes used in the detail section to identify sources and are listed in order of usage within the estimate:

1) MCACES MII English Cost Book 2006 (UPB) (as listed by database ID) Note: Labor, equipment and crews' databases have been updated to 2007 using current cost data.
2) Allowances, estimator's judgment, vendor quotes or costs based on previous work by CDM (no code listed)
3) CostWorks 2008 from RS Means "0000000000"

6.0 RISK ANALYSIS
The overall risk management process for the project involves (1) identifying risk factors, (2) analyzing and quantifying the properties of those risk factors, (3) mitigating the impact of the factors on planned project performance, and (4) developing and implementing a risk management plan. While the risk management process is just one part of the overall project planning process, it is incorporated in a concurrent and iterative manner with the other planning processes so as to refine project plans with a goal of increasing performance certainty. The first two elements of the risk management process (identifying risk factors; analyzing and quantifying the properties of those risk factors) have been performed in accordance with the Cost and Schedule Risk Analysis Process described in the August 2007 guidance developed by the USACE Walla Walla District.

Direct Cost Markups	**Category**	**Method**
Productivity	Productivity	Productivity
Overtime	Overtime	Overtime

	Days/Week	*Hours/Shift*	*Shifts/Day*	*1st Shift*	*2nd Shift*	*3rd Shift*
Standard	*5.00*	*8.00*	*1.00*	*8.00*	*0.00*	*0.00*
Actual	*5.00*	*8.00*	*1.00*	*8.00*	*0.00*	*0.00*

Day	*OT Factor*	*Working*	*OT Percent*	*FCCM Percent*
Monday	*1.50*	*Yes*	*0.00*	*0.00*
Tuesday	*1.50*	*Yes*		
Wednesday	*1.50*	*Yes*		
Thursday	*1.50*	*Yes*		
Friday	*1.50*	*Yes*		
Saturday	*1.50*	*No*		
Sunday	*2.00*	*No*		

Sales Tax	TaxAdj	Running % on Selected Costs
MatlCost		

Contractor Markups	**Category**	**Method**
JOOH	JOOH	Running %
JOOH - Subcontractor (Small Tools)	JOOH	% of Labor
JOOH - Subcontractor	JOOH	JOOH (Calculated)
HOOH	HOOH	Running %
HOOH - Subcontractor	Allowance	Running %
Profit	Profit	Running %
Profit - Subcontractor	Allowance	Running %
Bond	Bond	Running %
Bond - Subcontractor	Bond	Running %
Excise Tax	Excise	Running %

Owner Markups	**Category**	**Method**
Escalation 0407 - 15 Floodway Control	Escalation	Escalation

StartDate	*StartIndex*	*EndDate*	*EndIndex*	*Escalation*
5/21/2004	*571.55*	*10/31/2007*	*674.67*	*18.04*

Escalation 0507 - 02 Relocations	Escalation		Escalation	
StartDate	*StartIndex*	*EndDate*	*EndIndex*	*Escalation*
2/18/2005	*617.37*	*10/31/2007*	*685.22*	*10.99*
Escalation 0507 - 03 Reservoirs	Escalation		Escalation	
StartDate	*StartIndex*	*EndDate*	*EndIndex*	*Escalation*
1/31/2005	*648.68*	*10/31/2007*	*710.72*	*9.56*
Escalation 0507 - 04 Dams	Escalation		Escalation	
StartDate	*StartIndex*	*EndDate*	*EndIndex*	*Escalation*
1/31/2005	*598.72*	*10/31/2007*	*674.88*	*12.72*

Escalation 0507 - 05 Locks	Escalation		Escalation	
StartDate	*StartIndex*	*EndDate*	*EndIndex*	*Escalation*
1/31/2005	*599.22*	*10/31/2007*	*678.42*	*13.22*
Escalation 0507 - 06 Fish and Wildlife	Escalation		Escalation	
StartDate	*StartIndex*	*EndDate*	*EndIndex*	*Escalation*
1/31/2005	*597.79*	*1/31/2008*	*674.67*	*12.86*
Escalation 0507 - 08 Roads and Bridges	Escalation		Escalation	
StartDate	*StartIndex*	*EndDate*	*EndIndex*	*Escalation*
1/31/2005	*617.37*	*10/31/2007*	*685.22*	*10.99*
Escalation 0507 - 11 Levees and Floodwalls	Escalation		Escalation	
StartDate	*StartIndex*	*EndDate*	*EndIndex*	*Escalation*
1/31/2005	*618.00*	*10/31/2007*	*694.08*	*12.31*
Escalation 0507 - 13 Pumping Plant	Escalation		Escalation	
StartDate	*StartIndex*	*EndDate*	*EndIndex*	*Escalation*
1/31/2005	*603.75*	*10/31/2007*	*694.02*	*14.95*
Escalation 0507 - 14 Recreation Facilities	Escalation		Escalation	
StartDate	*StartIndex*	*EndDate*	*EndIndex*	*Escalation*
1/31/2005	*603.75*	*10/31/2007*	*694.02*	*14.95*
Escalation 0507 - 15 Floodway Control	Escalation		Escalation	
StartDate	*StartIndex*	*EndDate*	*EndIndex*	*Escalation*
1/31/2005	*597.76*	*10/31/2007*	*674.67*	*12.87*
Escalation 0507 - 18 Cultural	Escalation		Escalation	
StartDate	*StartIndex*	*EndDate*	*EndIndex*	*Escalation*
1/31/2005	*603.75*	*10/31/2007*	*694.02*	*14.95*
Escalation 0507 - 19 Buildings	Escalation		Escalation	
StartDate	*StartIndex*	*EndDate*	*EndIndex*	*Escalation*
1/31/2005	*603.75*	*10/31/2007*	*694.02*	*14.95*
Escalation 0507 - 33 HTRW	Escalation		Escalation	
StartDate	*StartIndex*	*EndDate*	*EndIndex*	*Escalation*
1/31/2005	*604.49*	*10/31/2007*	*682.63*	*12.93*
Escalation 0607 - 02 Relocations	Escalation		Escalation	
StartDate	*StartIndex*	*EndDate*	*EndIndex*	*Escalation*
1/31/2006	*643.94*	*10/31/2007*	*685.22*	*6.41*
Escalation 0607 - 03 Reservoirs	Escalation		Escalation	

StartDate	*StartIndex*	*EndDate*	*EndIndex*	*Escalation*
1/31/2006	*668.01*	*10/31/2007*	*710.72*	*6.39*
Escalation 0607 - 04 Dams	Escalation		Escalation	
StartDate	*StartIndex*	*EndDate*	*EndIndex*	*Escalation*
1/31/2006	*631.20*	*10/31/2007*	*674.88*	*6.92*
Escalation 0607 - 05 Locks	Escalation		Escalation	
StartDate	*StartIndex*	*EndDate*	*EndIndex*	*Escalation*
1/31/2006	*630.30*	*10/31/2007*	*678.42*	*7.63*
Escalation 0607 - 06 Fish and Wildlife	Escalation		Escalation	
StartDate	*StartIndex*	*EndDate*	*EndIndex*	*Escalation*
1/31/2006	*630.14*	*10/31/2007*	*674.67*	*7.07*
Escalation 0607 - 08 Roads and Bridges	Escalation		Escalation	
StartDate	*StartIndex*	*EndDate*	*EndIndex*	*Escalation*
1/31/2006	*643.94*	*10/31/2007*	*685.22*	*6.41*
Escalation 0607 - 11 Levees	Escalation		Escalation	
StartDate	*StartIndex*	*EndDate*	*EndIndex*	*Escalation*
1/31/2006	*651.23*	*10/31/2007*	*694.08*	*6.58*
Escalation 0607 - 13 Pumping Plant	Escalation		Escalation	
StartDate	*StartIndex*	*EndDate*	*EndIndex*	*Escalation*
1/31/2006	*638.50*	*10/31/2007*	*694.02*	*8.70*
Escalation 0607 - 14 Recreation	Escalation		Escalation	
StartDate	*StartIndex*	*EndDate*	*EndIndex*	*Escalation*
1/31/2006	*638.50*	*10/31/2007*	*694.02*	*8.70*
Escalation 0607 - 15 Floodway Control	Escalation		Escalation	
StartDate	*StartIndex*	*EndDate*	*EndIndex*	*Escalation*
1/31/2006	*630.14*	*10/31/2007*	*674.67*	*7.07*
Escalation 0607 - 18 Cultural Resource	Escalation		Escalation	
StartDate	*StartIndex*	*EndDate*	*EndIndex*	*Escalation*
1/31/2006	*638.50*	*10/31/2007*	*694.02*	*8.70*
Escalation 0607 - 19 Buildings	Escalation		Escalation	
StartDate	*StartIndex*	*EndDate*	*EndIndex*	*Escalation*
1/31/2006	*638.50*	*10/31/2007*	*694.02*	*8.70*
Escalation 0607 - 33 HTRW	Escalation		Escalation	
StartDate	*StartIndex*	*EndDate*	*EndIndex*	*Escalation*
1/31/2006	*638.08*	*10/31/2007*	*682.63*	*6.98*

Contingency - Lands and Damages	Contingency	Running %
Contingency	Contingency	Running %
SIOH	SIOH	Running %

Description	Quantity	UOM	CostToPrime	ContractCost	Escalation	Contingency	ProjectCost
Project Cost Summary Report			**233,419,764**	**474,784,054**	**31,959,573**	**0**	**506,743,626**
1 01 Federal 220	**1.00**	**LS**	**79,846,330**	**149,771,957**	**9,336,959**	**0**	**159,108,916**

(Note: Section 116 of Public Law 108-447, dated 8 December 2004, authorized USACE's participation in construction of the Central City Project. Within that specific authorization, a subset which can be constructed by the USACE and the local sponsor, identified as the USACE's project, was defined at $110,000,000 federal cost and a $220,000,000 total project cost.)

1.1 01 Lands and Damages	**1.00**	**LS**	**0**	**31,183,334**	**0**	**0**	**31,183,334**

(Note: This category includes costs associated with the acquisition of property for the project. The costs were tabulated by the major work element for which it will be acquired and property acquisition assistance costs. The four (4) major work elements are: bypass channel, water feature, valley storage (Riverside/Gateway and Marine Creek. The costs associated with each element of work were determined after review of the mass appraisals performed by James K. Norwood, Certified Real Estate Appraiser. Appraisals were performed on the Central City Project on behalf of the Tarrant Regional Water District and at the Riverside Oxbow/Gateway on behalf of the USACE. Estimated costs in this estimate are based on the best known information at the time of the estimate and may vary from the amounts in the Norwood appraisals given modifications in the project footprint. Costs were normalized to the baseline 2007 by factors provided by the Real Estate Division USACE Fort Worth District. A factor of 6% per year was used for land values and a 15% flat rate was used for administrative fees. Landowner relocation costs were provided by a separate independent relocation study. This category includes anticipated costs for the relocation and moving of current property owners and tenants on the affected property. Costs for relocations of persons and businesses under this section are based on the report prepared by Pinnacle Consulting Management Group, Inc dated February 2, 2005. Costs were adjusted to baseline 2007 cost utilizing factors provided by Pinnacle Group of 4% compounded annually.)

1.1.1 10 Property Acquisition	**1.00**	**LS**	**0**	**26,568,716**	**0**	**0**	**26,568,716**
1.1.2 15 Property Relocations	**1.00**	**LS**	**0**	**4,614,618**	**0**	**0**	**4,614,618**
1.2 03 Reservoirs	**1.00**	**LS**	**32,511,328**	**40,776,715**	**2,492,081**	**0**	**43,268,795**

(Note: Samuels Avenue and University Drive are the two original locations which were identified for Valley Storage improvements. The Supplemental EIS added the Rockwood West, Ham Branch, Riverside Park, and the Riverside Oxbow/Gateways sites. Demolition of minor structures inherent to construction activities will be conducted as needed. It is the intent of the local sponsors to develop a recycling and reuse plan to reduce landfill waste. Demolition debris will be recycled or reused beneficially to reduce costs to the extent practicable. Demolition debris that cannot otherwise be used onsite will be hauled to the City of Fort Worth construction debris landfill on Bennen Avenue or the TRWD disposal area. There will be no disposal fees associated with construction debris disposed at either facility. Site improvements include removing unnecessary structures, site grading to allow for more valley storage and construction of new levees. In addition, new flood control structures, seeding and utility replacements are included in the expected costs. The University Drive site primarily consists of roadway and grade modifications/improvements. Borrow material required for University Drive site will be imported from the bypass channel and valley storage sites. For each of the Valley Storage excavation sites spoils/disposal areas were identified for haul-off of excavated materials. For major sites such as Riverside/Gateway, where haul routes incorporate public roadways, allowances were provided for street sweeping and restoration.)

1.2.1 05 Valley Storage	**1.00**	**LS**	**32,511,328**	**40,776,715**	**2,492,081**	**0**	**43,268,795**

(Note: An estimated volume of 737,000 BCY of soil and 130,000 BCY of rock will be excavated from the Samuels Avenue north and south sites. The estimated excavation volume from the Samuels Avenue north site is 552,000 BCY (422,000 BCY soil and 130,000 BCY rock). The estimated excavation volume from the Samuels Avenue south site is 315,000 BCY. All the excavated material from the Samuels Avenue north site will be hauled to the city landfill site. All the excavated material will be hauled to the city impound lot. Soil will be dumped, spread, and compacted at each site.)

(Note: Spread and compact dumped fill from Samuels Avenue sites. An estimated 506,400 LCY hauled to the city landfill and 378,000 LCY hauled to the city impound lot.)

(Note: Excavated material (an estimated 130,000 BCY) from the Rockwood Park - West site will be brought to the University Drive site. Soil from the Rockwood Park - West site will be spread and compacted.)

(Note: Spread and compact dumped fill from Rockwood Park West (130,000 BCY).)

(Note: An estimated 3,000 BCY of material will be excavated and used for the Ham Branch Levee. Soil will be dumped, spread, and compacted at each site.)

(Note: Spread and compact dumped fill from Ham Branch (3,000 BCY) and Riverside Park (16,000 BCY) sites. Excavation and hauling of material from Riverside Park is included in the costs for Valley Storage - Riverside Park.)

(Note: An estimated total volume of 302,000 BCY at Riverside Park will be excavated and hauled to the Ham Branch Levee (16,000 BCY) and the city land fill/city impound lot (286,000 BCY). Soil will be dumped, spread, and compacted at each site.)

(Note: Spread and compact dumped fill from Riverside Park (286,000 BCY) at the city landfill and city impound lot. Placement and compaction of material hauled for the Ham Branch Levee is included in the costs for Valley Storage - Ham Branch.)

(Note: An estimated total volume of 148,000 BCY at Rockwood Park - West will be excavated and hauled to the University Drive site (130,000 BCY) and the bypass channel (18,000 BCY).)

(Note: An estimated total volume of 2,212,000 BCY at Riverside Oxbow will be excavated and hauled to the old wastewater treatement plant (WWTP) site (1,074,000 BCY) and the1st Street Landfill site (1,138,000 BCY). Soil will be dumped, spread, and compacted at each site.)

(Note: An estimated total volume of 861,000 BCY at Riverside Gateway will be excavated and hauled to the Beach Street Fill site (316,000 BCY), the old wastewater treatement plant (WWTP) site (441,000 BCY) and the hydraulic embankment site (104,000 BCY). Soil will be dumped, spread, and compacted at each site.)

1.3 06 Fish and Wildlife Facilities	**1.00**	**LS**	**214,838**	**269,457**	**34,652**	**0**	**304,109**

(Note: Fish and wildlife facilities include costs to restore and improve the various habitats at several valley storage sites. The primary locations for ecosystem features are Rockwood Park, Ham Branch and

Description	Quantity	UOM	CostToPrime	ContractCost	Escalation	Contingency	ProjectCost
Riverside Oxbow/Gateway. The improvements that are included are seeding (both normal Bermuda grass and grassland/wetlands) and tree plantings. Excavations included with the development of valley storage capacity include the opening of the old Sycamore Creek Oxbow and excavation of the old Riverside Oxbow. In addition, 50,000 cubic yards of earthwork is included at the Rockwood site for the restoration of an existing oxbow. Costs for Ecosystem development including Riparian Forest, Wetlands, and Grasslands were prepared by the Environmental Branch USACE Fort Worth District.)							
1.3.1 15 Ham Branch	**1.00**	**LS**	**214,838**	**269,457**	**34,652**	**0**	**304,109**
1.4 11 Levees and Floodwalls	**1.00**	**LS**	**29,861,028**	**37,452,628**	**3,672,525**	**0**	**41,125,152**
(Note: Bypass Channel construction was been broken into two separate areas; North and South. The channel will consist of an excavated center channel with a new earthen levee constructed on the west side of the channel and multi-level reinforced concrete floodwalls on the east side. Both sides of the channel will have recreational paths for pedestrian access. All excess excavation material will be stockpiled in the future development area for use during construction of the flood control gates, backfill behind the retaining walls and White Settlement roadway embankment. Two pedestrian crossings will be constructed across the new channel and the West Fork Trinity River (just prior to the intersection with the new channel). Both pedestrian crossings will be designed to act as water breaks during a flood event.)							
1.4.1 Bypass Channel - North	**1.00**	**LS**	**13,507,391**	**16,941,389**	**1,639,152**	**0**	**18,580,541**
(Note: The valley fill is the portion of levees and berms around the Valley Storage sites. The levee fill is located adjacent to the Bypass Channels to adjust the channel walls for flood conditions. The retaining wall fill is estimated in the earthwork portion. The gate fill is located at one of the three gates. The remainder of fill is assumed to be used as fill for road projects. Fill volumes were determined in bank cubic yard (BCY), loose cubic yard (LCY), and embankment cubic yard (ECY) units of measure. A bulking factor of 1.2 was assumed for converting BCY to LCY. A compaction factor of 0.9 was assumed for converting LCY to ECY.)							
(Note: Lower retaining wall is approximately 4,028 feet long. The footing is 16’ wide and 1’-6” thick. The wall is 1’-2” thick and 12’ high. Middle retaining wall is approximately 4,028 feet long. The footing is 11’-6” wide and 1’-6” thick. The wall is 1’-2” thick and 11’-6” high. Upper retaining wall is approximately 3,678 feet long. The footing is between 6’-6” and 11’-3” wide and between 1’-6” and 1’-8” thick. The wall is between 1’-2” and 1’-5.5” thick and between 7’-6” and 11’-4” high.)							
1.4.2 Bypass Channel - South	**1.00**	**LS**	**16,353,637**	**20,511,239**	**2,033,372**	**0**	**22,544,611**
(Note: The valley fill is the portion of levees and berms around the Valley Storage sites. The levee fill is located adjacent to the Bypass Channels to adjust the channel walls for flood conditions. The retaining wall fill is estimated in the earthwork portion. The gate fill is located at one of the three gates. The remainder of fill is assumed to be used as fill for road projects. Fill volumes were determined in bank cubic yard (BCY), loose cubic yard (LCY), and embankment cubic yard (ECY) units of measure. A bulking factor of 1.2 was assumed for converting BCY to LCY. A compaction factor of 0.9 was assumed for converting LCY to ECY.)							
(Note: Lower retaining wall is approximately 4,200 feet long. The footing is 16’ wide and 1’-6” thick. The wall is 1’-2” thick and 12’ high. Middle retaining wall is approximately 4,150 feet long. The footing is 11’-6” wide and 1’-6” thick. The wall is 1’-2” thick and 11’-6” high. Upper retaining wall is approximately 4,150 feet long. The footing is between 11’-3” and 16’ wide and between 1’-8” and 1’-10” thick. The wall is between 1’-5.5” and 1’-9” thick and between 11’-4” and 15’-2” high.)							
1.5 15 Flood Control and Diversion Structures	**1.00**	**LS**	**17,259,136**	**21,646,944**	**3,048,962**	**0**	**24,695,906**
(Note: Three (3) gate control structures (Clear Fork, Trinity Point and TRWD) will be constructed for the project. All three (3) structures will be constructed of concrete with battered foundation piles providing support to bedrock. The Clear Fork gate will also have a sheet pile cutoff wall. Each gate will have one large (24 feet x 17 feet) vertical roller gate and at least one small (12 feet x 10 feet) vertical roller gate (Trinity Point Gate - two). The large gate will be used for normal water control and boat access to the interior area, while the smaller gate(s) will be used to seal off pedestrian access during flooding conditions. Gates can be inspected when open through internal access areas. In addition, each gate will have an enclosed control room and instrumentation system for monitoring the gates. Budgetary information on gate construction and installation costs was provided by General Electric Hydro.)							
1.5.1 05 Clear Fork	**1.00**	**LS**	**8,219,509**	**10,309,163**	**1,465,747**	**0**	**11,774,910**
(Note: Embankment road....)							
1.5.2 15 TRWD	**1.00**	**LS**	**9,039,627**	**11,337,781**	**1,583,215**	**0**	**12,920,995**
1.6 18 Cultural Resource Preservation	**1.00**	**LS**	**0**	**1,020,000**	**88,740**	**0**	**1,108,740**
(Note: These costs were determined by USACE in accordance with the requirements contained in the Programmatic Agreement between the USACE and Texas Historical Commission.)							
1.7 30 Planning, Engineering, and Design	**1.00**	**LS**	**0**	**11,345,131**	**0**	**0**	**11,345,131**
(Note: This category includes anticipated costs for design and permitting including but not limited to development of planning, engineering and design, independent technical review (ITR), cost estimation, value engineering (VE), contract bid packages, engineering services during construction, planning during construction, environmental permitting, and permit fees. The costs are divided into three main tasks: 1) A/E Design Fees; 2) Permits, Fees, and Licenses; 3) Survey and Testing; and 4) Legal Costs. Costs under this category are based on a percentage of the total construction cost with contingency. Based on the complexity, magnitude, and duration of the project the costs have been assumed as approximately 5.0% for A/E Design Fees and 1.7% for Permits, Fees and Licenses for a total of 6.7% for this category.)							
1.8 31 Construction Management	**1.00**	**LS**	**0**	**6,077,749**	**0**	**0**	**6,077,749**
(Note: Construction management includes, but is not limited to, costs for: meetings (pre-construction, progress, post-con), field coordination, inspection, survey control, contract modifications, payment request processing. Costs under this category are based on a percentage of the total construction cost with contingency. Based on the complexity, magnitude, and duration of the project the costs have been							

Description	Quantity	UOM	CostToPrime	ContractCost	Escalation	Contingency	ProjectCost
assumed as approximately 4.6% for this category.)							
2 02 Non-Federal	**1.00**	**LS**	**153,573,434**	**325,012,097**	**22,622,613**	**0**	**347,634,710**
(Note: The non-federal sponsor is the Tarrant Regional Water District (TRWD) and the City of Fort Worth is one of the local partners. These entities are also sponsors for the Riverside Oxbow Ecosystem Restoration Project.)							
2.1 01 Lands and Damages	**1.00**	**LS**	**0**	**53,111,628**	**0**	**0**	**53,111,628**
(Note: This category includes costs associated with the acquisition of property for the project. The costs were tabulated by the major work element for which it will be acquired and property acquisition assistance costs. The four (4) major work elements are: bypass channel, water feature, valley storage (Riverside/Gateway and Marine Creek. The costs associated with each element of work were determined after review of the mass appraisals performed by James K. Norwood, Certified Real Estate Appraiser. Appraisals were performed on the Central City Project on behalf of the Tarrant Regional Water District and at the Riverside Oxbow/Gateway on behalf of the USACE. Estimated costs in this estimate are based on the best known information at the time of the estimate and may vary from the amounts in the Norwood appraisals given modifications in the project footprint. Costs were normalized to the baseline 2007 by factors provided by the Real Estate Division USACE Fort Worth District. A factor of 6% per year was used for land values and a 15% flat rate was used for administrative fees. Property acquisition assistance costs are included for consulting fees, legal assistance, and other permitting, subordinated fees, licenses that will be incurred as part of the land acquisition activity. These costs are for additional analysis, planning, acquisition documents and proceedings including any additional appraisals and possible condemnation proceedings. Base cost for these assistance cost was estimated at 13% of the Property Acquisition Cost and allocated at 5.2% Consulting, 5.2% Legal, and 2.6% Permitting & Licensing. A contingency was not been provided on these costs as they are considered separate consulting costs. Landowner relocation costs were provided by a separate independent relocation study. This category includes anticipated costs for the relocation and moving of current property owners and tenants on the affected property. Costs for relocations of persons and businesses under this section are based on the report prepared by Pinnacle Consulting Management Group, Inc dated February 2, 2005. Costs were adjusted to baseline 2007 cost utilizing factors provided by Pinnacle Group of 4% compounded annually. A uniform contingency of 10% was included on the Landowner Relocation costs to account for market fluctuations.)							
2.1.1 05 Property Acquistion Assistance	**1.00**	**LS**	**0**	**7,239,991**	**0**	**0**	**7,239,991**
2.1.2 10 Property Acquisition	**1.00**	**LS**	**0**	**28,406,743**	**0**	**0**	**28,406,743**
2.1.3 15 Property Relocations	**1.00**	**LS**	**0**	**17,464,894**	**0**	**0**	**17,464,894**
2.2 02 Relocations	**1.00**	**LS**	**21,735,374**	**30,177,032**	**2,710,958**	**0**	**32,887,990**
(Note: Utility relocations are required for the construction of the project. A variety of utility lines including sewers, storm sewers, water mains, gas mains, electrical and cable will need to be relocated and/or demolished. Existing utilities were contacted, maps obtained and impacted utilities identified. City and franchise utility owners were contacted regarding location and costs for major relocations. Cost for the relocation of the 138 kilovolt (kV) transmission line provided by TXU Electric. Construction Costs for these items have been included in this section. A contingency of 20% was included on these costs. This section also includes the demolition of structures and paving in the bypass channel and the water feature areas. Approximately 1,583,575 square feet of light industrial buildings will be demolished. The average building height was assumed to be 20 feet tall with 7.5% of building volume requiring disposal. Concrete paving was assumed to be 8-inch thick with approximately 48,780 square yards required for removal. Asphalt paving was assumed to be 6-inch thick with approximately 127,800 square yards of material removal. It is the intent of the local sponsors to develop a recycling and reuse plan to reduce landfill waste. Concrete debris may be used as armor in non-visible areas or crushed and used as fill during site construction. Demolition debris that cannot be recycled or reused beneficially will be hauled to the City of Fort Worth construction debris landfill on Bennen Avenue or the TRWD disposal area. There will be no disposal fees associated with construction debris disposed at either facility.)							
2.2.1 05 Mobilization and Demobilization	**1.00**	**LS**	**8,157**	**10,230**	**0**	**0**	**10,230**
2.2.2 10 General Demolition and Site Preparation	**1.00**	**LS**	**6,950,331**	**9,650,074**	**643,855**	**0**	**10,293,929**
2.2.3 15 Utility Relocation - Sanitary Sewer, Potable Water, Storm Sewer and Natural Gas	**1.00**	**LS**	**6,856,579**	**9,519,905**	**924,122**	**0**	**10,444,027**
2.2.4 20 Utility Relocation - Electrical and Communication	**1.00**	**LS**	**1,906,690**	**2,647,312**	**226,236**	**0**	**2,873,548**
2.2.5 25 Utility Relocation - Transmission Lines	**1.00**	**LS**	**6,013,617**	**8,349,509**	**916,745**	**0**	**9,266,254**
2.3 04 Dams	**1.00**	**LS**	**30,135,365**	**37,796,708**	**4,442,392**	**0**	**42,239,100**
(Note: Downstream of the bypass channel a new dam structure will be constructed on the West Fork Trinity River. The dam will consist of seven (7) leaf gates placed into a concrete support structure. Three (3) sluice gates will also be provided in the bottom of the dam to assist in the control of upstream water levels. The concrete structure will have a maintenance access bridge to provide maintenance access to the leaf gates on the top of the dam and will be supported on a series of drilled shafts anchored in a bedrock foundation. A sheet piling system is proposed as a positive cut-off for seepage and as part of the construction sequencing plan. A low water fixed broad crest weir dam is proposed on Marine Creek in near proximity to the Samuels Avenue Dam. The dam will be constructed of roller compacted concrete with a cast-in-place concrete cap on all portions above the stilling basin. Driven sheet piling will be used for seepage cut-off. A small lock structure for pleasure boats is proposed for connectivity between the Marine Creek and Samuels Dam impoundments. The lock will be a reinforced concrete structure with miter gates.)							
2.3.1 05 Samuels Avenue Dam	**1.00**	**LS**	**22,070,242**	**27,681,182**	**3,268,232**	**0**	**30,949,414**
2.3.2 10 Marine Creek Low Water Dam/Lock	**1.00**	**LS**	**8,065,122**	**10,115,526**	**1,174,160**	**0**	**11,289,686**
2.4 06 Fish and Wildlife Facilities	**1.00**	**LS**	**6,942,391**	**9,638,017**	**1,197,229**	**0**	**10,835,246**

Description	Quantity	UOM	CostToPrime	ContractCost	Escalation	Contingency	ProjectCost
(Note: Fish and wildlife facilities include costs to restore and improve the various habitats at several valley storage sites. The primary locations for ecosystem features are Rockwood Park, Ham Branch and Riverside Oxbow/Gateway. The improvements that are included are seeding (both normal Bermuda grass and grassland/wetlands) and tree plantings. Excavations included with the development of valley storage capacity include the opening of the old Sycamore Creek Oxbow and excavation of the old Riverside Oxbow. In addition, 50,000 cubic yards of earthwork is included at the Rockwood site for the restoration of an existing oxbow. Costs for Ecosystem development including Riparian Forest, Wetlands, and Grasslands were prepared by the Environmental Branch USACE Fort Worth District.)							
2.4.1 10 Riverside Oxbow/Gateway	**1.00**	**LS**	**6,492,180**	**9,013,445**	**1,153,072**	**0**	**10,166,517**
2.4.2 05 Rockwood Park	**1.00**	**LS**	**450,211**	**624,572**	**44,157**	**0**	**668,729**
2.5 08 Roads, Railroads and Bridges	**1.00**	**LS**	**50,983,881**	**63,945,564**	**6,634,002**	**0**	**70,579,566**
(Note: A. Henderson Bridge and Roadway Henderson Bridge will be a 6 lane standard bridge approximately 700 feet long with 10 feet wide concrete walks on both sides. Elevated embankments will lead up to the bridge on both sides of the future channel. The embankments will be supported by concrete retaining walls. The roadways will be constructed of concrete and include street lighting, pavement marking and signage. Construction of the roadway will require a temporary roadway detour. B. White Settlement Bridge and Roadway White Settlement Bridge will be a 4 lane standard bridge approximately 735 feet long with 10 feet wide concrete walks on both sides. Elevated embankments will lead up to the bridge on both sides of the future channel. The embankments will be supported by concrete retaining walls. The roadways will be constructed of concrete and include street lighting, pavement marking and signage. Construction of the roadway will require a temporary roadway. Installation of the final traffic signal for the White Settlement and Henderson Street intersection are included under this task. C. Main Street Bridge and Roadway Main Street Bridge will be a 4 lane designer (cable stayed) bridge approximately 406 feet long with 10 feet wide concrete walks on both sides. Elevated embankments will lead up to the bridge on both sides of the future channel. The embankments will be supported by concrete retaining walls. The roadways will be constructed of concrete. The roadways will be constructed of concrete and include street lighting, pavement marking and signage. Construction of the roadway will require a roadway detour onto an existing roadway. D. White Settlement at Water Feature Bridge and Roadway The White Settlement Bridge will be a 4 lane standard bridge approximately 450 feet long with 10 feet wide concrete walks on both sides. The bridge will cross the expanded Water Feature Elevated embankments will lead up to the bridge on both sides of the future channel. The embankments will be supported by concrete retaining walls. The roadways will be constructed of concrete. The roadways will be constructed of concrete and include street lighting, pavement marking and signage. E. Beech Street Bridge The existing Beech Street Bridge will be replaced with a 4 lane standard bridge approximately 115 feet long supported on drilled shafts. Elevated embankments will lead up to the bridge on both sides of the existing old oxbow channel. The interior embankments will be lined with concrete slope protection. The roadways will be constructed of concrete and pavement markings and signage. F. Park Roads and Bridge Costs are provided for over 4950 feet of two lane park entrance and roadways, 48,060 square feet of parking and one two lane park road bridge 103 ft in length. G. Other Street Modifications Additional costs were provided to perform modifications to the various local streets that will be affected by the construction of the channel. These modifications include providing turnouts, dead ends and patching of existing roads and drainage system.)							
2.5.1 05 Henderson Bridge and Roadway	**1.00**	**LS**	**14,011,776**	**17,574,003**	**1,824,450**	**0**	**19,398,453**
2.5.2 10 White Settlement Bridge and Roadway	**1.00**	**LS**	**10,674,760**	**13,388,615**	**1,425,225**	**0**	**14,813,840**
2.5.3 15 Main Street Bridge and Roadway	**1.00**	**LS**	**14,099,043**	**17,683,456**	**1,911,135**	**0**	**19,594,591**
2.5.4 20 White Settlement Extension Bridge and Roadway	**1.00**	**LS**	**3,409,784**	**4,276,657**	**428,548**	**0**	**4,705,204**
2.5.5 25 Other Street Modifications	**1.00**	**LS**	**2,058,055**	**2,581,277**	**259,955**	**0**	**2,841,232**
2.5.6 30 Riverside Oxbow Park	**1.00**	**LS**	**4,328,895**	**5,429,435**	**505,448**	**0**	**5,934,883**
2.5.7 35 Riverside Gateway Park	**1.00**	**LS**	**896,513**	**1,124,435**	**72,076**	**0**	**1,196,511**
2.5.8 40 Bypass Channel Pedesterian Bridges	**1.00**	**LS**	**1,505,054**	**1,887,686**	**207,166**	**0**	**2,094,852**
2.6 13 Pumping Plants	**1.00**	**LS**	**3,558,204**	**4,939,462**	**683,260**	**0**	**5,622,722**
(Note: A Stormwater Pumping Facility will be included in the project to maintain the water level inside the water feature area during high water period rainfall events on the West Fork. This facility will be located adjacent to the TRWD Gate and will be constructed at the same time as the gate structure. The facility will contain a total of four (4) 45,000 gallon per minute pumps and be constructed of a concrete wet well and a masonry building. An emergency generator will be shared with the TRWD gate structure. In addition, access and parking will be provided adjacent to the site.)							
2.6.1 05 Stormwater Pumping Facility	**1.00**	**LS**	**3,558,204**	**4,939,462**	**683,260**	**0**	**5,622,722**
2.7 14 Recreation Facilities	**1.00**	**LS**	**14,226,334**	**19,654,383**	**2,615,465**	**0**	**22,269,848**
(Note: A. Valley Storage Sites For the Rockwood West, Samuels Avenue and Ham Branch Valley storage Sites the recreational facilities consist of the replacement of concrete trails. B. Water Feature A water feature will be constructed at the existing confluence of the West Fork Trinity River and the Clear Fork Trinity River. The Water Feature area will be constructed with concrete retaining walls and walks. Recirculation pumps and housings are also included in the estimate to assist in the circulation of water in the interior area. A preliminary design had not been developed at the time of the estimate. A contingency of 20% was included on these costs. C. Marine Creek Modifications will be made to Marine Creek, upstream of Samuel Avenue Dam, in order to ensure that pedestrian access will be available once the dam is constructed and the water impoundment is created. The modifications include construction of concrete retaining walls and new walks, lighting, and pedestrian bridge. A contingency of 20% was included on these costs. D. Riverside Park Costs include the reconstruction of existing parking and new entrance roads. Allowances are provided for new athletic fields lighting, or relocations depending upon the final design and park plan. E. Riverside/Gateway Park In addition to the hard and soft trail system and two pedestrian bridges a number of special construction items have been included. The design of these facilities has yet to be determined so these items are shown as standard unit cost from RS MEANS based upon approximate foot prints. These include a 1,000 square feet concession stand with							

Description	Quantity	UOM	CostToPrime	ContractCost	Escalation	Contingency	ProjectCost
restrooms, 1,500 square feet splash park, four covered basketball courts, and bleachers. Allowances for electrical service, and lighting are provided.)							
2.7.1 05 Water Feature	**1.00**	**LS**	**7,793,740**	**10,819,072**	**1,445,037**	**0**	**12,264,109**
2.7.2 10 Samuels Avenue	**1.00**	**LS**	**205,204**	**284,180**	**24,724**	**0**	**308,903**
2.7.3 15 Marine Creek	**1.00**	**LS**	**2,032,073**	**2,788,090**	**392,807**	**0**	**3,180,897**
2.7.4 20 Ham Branch	**1.00**	**LS**	**26,925**	**36,760**	**3,198**	**0**	**39,958**
2.7.5 25 Riverside Park	**1.00**	**LS**	**380,928**	**528,160**	**66,234**	**0**	**594,394**
2.7.6 30 Rockwood Park - West	**1.00**	**LS**	**104,363**	**144,168**	**12,543**	**0**	**156,710**
2.7.7 35 Riverside Oxbow/Gateway Park	**1.00**	**LS**	**3,683,100**	**5,053,953**	**670,924**	**0**	**5,724,877**
2.8 15 Flood Control and Diversion Structures	**1.00**	**LS**	**8,433,646**	**10,577,741**	**1,538,839**	**0**	**12,116,580**
(Note: Three (3) gate control structures (Clear Fork, Trinity Point and TRWD) will be constructed for the project. All three (3) structures will be constructed of concrete with battered foundation piles providing support to bedrock. The Clear Fork gate will also have a sheet pile cutoff wall. Each gate will have one large (24 feet x 17 feet) vertical roller gate and at least one small (12 feet x 10 feet) vertical roller gate (Trinity Point Gate - two). The large gate will be used for normal water control and boat access to the interior area, while the smaller gate(s) will be used to seal off pedestrian access during flooding conditions. Gates can be inspected when open through internal access areas. In addition, each gate will have an enclosed control room and instrumentation system for monitoring the gates. Budgetary information on gate construction and installation costs was provided by General Electric Hydro.)							
2.8.1 10 Trinity Point	**1.00**	**LS**	**8,433,646**	**10,577,741**	**1,538,839**	**0**	**12,116,580**
2.9 30 Planning, Engineering, and Design	**1.00**	**LS**	**0**	**32,717,096**	**0**	**0**	**32,717,096**
(Note: This category includes anticipated costs for design and permitting including but not limited to development of final designs, contract bid packages, cost estimation, engineering services during construction, environmental permitting, and permit fees. The costs are divided into two main tasks: 1) A/E Design Fees and 2) Permits, Fees, and Licenses. Costs under this category are based on a percentage of the total construction cost with contingency. Based on the complexity, magnitude, and duration of the project the costs have been assumed as approximately 5.0% for A/E Design Fees and 1.7% for Permits, Fees and Licenses for a total of 6.7% for this category.)							
2.10 31 Construction Management	**1.00**	**LS**	**0**	**40,432,378**	**0**	**0**	**40,432,378**
(Note: This category includes anticipated costs for program management and construction management. A. Program Management This category includes anticipated costs for program management services during the design and construction of the project. Program management services are anticipated, but not limited to be: Agency Coordination/Management, Standards Development, Maintenance of Project Records and Base Files, Funding/ Grants and Cost Accounting, Contract Procurement, Project Schedule Maintenance, and Closeout. Costs under this category are based on a percentage of the total construction cost with contingency. Based on the complexity, magnitude, and duration of the project the costs have been assumed as approximately 4.9% for this category. No contingency was included on these costs. B. Construction Management This category includes anticipated costs for construction management including but not limited to costs for: meetings (pre-con, progress, post-con), field coordination, inspection, survey control, contract modifications, payment request processing. Costs under this category are based on a percentage of the total construction cost with contingency. Based on the complexity, magnitude, and duration of the project the costs have been assumed as approximately 4.6% for this category.)							
2.11 33 HTRW	**1.00**	**LS**	**17,558,239**	**22,022,088**	**2,800,467**	**0**	**24,822,555**
(Note: The HTRW category includes costs for environmental services and remediation on the project and was developed based on the results of the environmental records review completed for the potentially impacted properties during the initial EIS phase. For the Phase I and Phase II site assessments the following allowances were used: Update the Phase I EIS data, 173 parcels at an cost of $1,000/ site; Phase II site assessments assumed 106 sites at $9,200/site: soil and groundwater testing 1350 samples at $335/sample and 413 samples at $430/sample; asbestos surveys estimated at 50 building at $1,150/structure Environmental remediation costs for the project were developed primarily for the potentially impacted properties within the proposed bypass channel at each of the sites with records indicating potential release of petroleum or hazardous chemicals. Costs include, but are not limited to, the following: - Investigation of assumed contaminated sites; - Excavation and disposal of underground storage tanks (USTs) and accompanying contaminated soils; - Placement of short-term groundwater recovery/treatment systems at locations with leaking USTs (LUSTs)/USTs; - Excavation and disposal of assumed volumes of contaminated soil based on the number of databases that each site appears within; - Analytical costs for characterization of the contaminated soils for disposal and confirmation of complete removal; and - Engineering design fees and administrative costs for following required regulatory guidelines and submittal of appropriate reports to regulatory agencies. Asbestos abatement costs were calculated based on factoring the total square footage buildings to be removed to determine office type space within the total building footprint which would likely contain asbestos. Of the total of 1.5 million square feet of buildings to be demolished, 50 % is assumed to be finished and of that amount 20% was assumed to contain asbestos. Abatement unit price were then used from MEANS Environmental Remediation Book to determine the estimated asbestos abatement cost. The HTRW construction costs are based on the best available information at this time and will be updated and refined as design development is advanced and more information can be obtained within the project footprint.)							
2.11.1 Envrionmental Assessments	**1.00**	**LS**	**1,889,200**	**2,369,493**	**259,387**	**0**	**2,628,880**
2.11.2 Site Remediation	**1.00**	**LS**	**14,002,039**	**17,561,791**	**2,270,740**	**0**	**19,832,531**
2.11.3 Remediation Program Management	**1.00**	**LS**	**1,667,000**	**2,090,803**	**270,341**	**0**	**2,361,144**

Description	Quantity	UOM	Contractor	DirectCost	SubCMU	CostToPrime	PrimeCMU	ContractCost
Contract Cost Summary Report				**399,870,163**	**9,436,918**	**233,419,764**	**65,476,973**	**474,784,054**
01 Federal 220	**1.00**	**LS**		**122,308,542**	**7,164,002**	**79,846,330**	**20,299,412**	**149,771,957**
01 Lands and Damages	**1.00**	**LS**		**31,183,334**	**0**	**0**	**0**	**31,183,334**
10 Property Acquisition	**1.00**	**LS**		**26,568,716**	**0**	**0**	**0**	**26,568,716**
15 Property Relocations	**1.00**	**LS**		**4,614,618**	**0**	**0**	**0**	**4,614,618**
03 Reservoirs	**1.00**	**LS**	**Valley Storage General Contractor**	**30,285,034**	**2,226,294**	**32,511,328**	**8,265,387**	**40,776,715**
05 Valley Storage	**1.00**	**LS**	**Valley Storage General Contractor**	**30,285,034**	**2,226,294**	**32,511,328**	**8,265,387**	**40,776,715**
06 Fish and Wildlife Facilities	**1.00**	**LS**	**Ham Branch Ecosystem General Contractor**	**214,838**	**0**	**214,838**	**54,619**	**269,457**
15 Ham Branch	**1.00**	**LS**	**Ham Branch Ecosystem General Contractor**	**214,838**	**0**	**214,838**	**54,619**	**269,457**
11 Levees and Floodwalls	**1.00**	**LS**	**Bypass Channel and Levees General Contractor**	**26,807,718**	**3,053,310**	**29,861,028**	**7,591,599**	**37,452,628**
Bypass Channel - North	**1.00**	**LS**	**Bypass Channel and Levees General Contractor**	**12,128,437**	**1,378,954**	**13,507,391**	**3,433,998**	**16,941,389**
Bypass Channel - South	**1.00**	**LS**	**Bypass Channel and Levees General Contractor**	**14,679,281**	**1,674,356**	**16,353,637**	**4,157,602**	**20,511,239**
15 Flood Control and Diversion Structures	**1.00**	**LS**	**Isolation Gate General Contractor - Clear Fork and TRWD**	**15,374,738**	**1,884,398**	**17,259,136**	**4,387,807**	**21,646,944**
05 Clear Fork	**1.00**	**LS**	**Isolation Gate General Contractor - Clear Fork and TRWD**	**7,317,987**	**901,522**	**8,219,509**	**2,089,654**	**10,309,163**
15 TRWD	**1.00**	**LS**	**Isolation Gate General Contractor - Clear Fork and TRWD**	**8,056,751**	**982,876**	**9,039,627**	**2,298,153**	**11,337,781**
18 Cultural Resource Preservation	**1.00**	**LS**		**1,020,000**	**0**	**0**	**0**	**1,020,000**
30 Planning, Engineering, and Design	**1.00**	**LS**		**11,345,131**	**0**	**0**	**0**	**11,345,131**
31 Construction Management	**1.00**	**LS**		**6,077,749**	**0**	**0**	**0**	**6,077,749**
02 Non-Federal	**1.00**	**LS**	**General Contractor**	**277,561,620**	**2,272,915**	**153,573,434**	**45,177,561**	**325,012,097**

Description	Quantity	UOM	Contractor	DirectCost	SubCMU	CostToPrime	PrimeCMU	ContractCost
01 Lands and Damages	1.00	LS		53,111,628	0	0	0	53,111,628
05 Property Acquistion Assistance	1.00	LS		7,239,991	0	0	0	7,239,991
10 Property Acquisition	1.00	LS		28,406,743	0	0	0	28,406,743
15 Property Relocations	1.00	LS		17,464,894	0	0	0	17,464,894
02 Relocations	1.00	LS	General Contractor	21,735,374	0	21,735,374	8,441,657	30,177,032
05 Mobilization and Demobilization	1.00	LS	Bypass Channel and Levees General Contractor	8,157	0	8,157	2,074	10,230
10 General Demolition and Site Preparation	1.00	LS	General Contractor	6,950,331	0	6,950,331	2,699,743	9,650,074
15 Utility Relocation - Sanitary Sewer, Potable Water, Storm Sewer and Natural Gas	1.00	LS	General Contractor	6,856,579	0	6,856,579	2,663,326	9,519,905
20 Utility Relocation - Electrical and Communication	1.00	LS	General Contractor	1,906,690	0	1,906,690	740,623	2,647,312
25 Utility Relocation - Transmission Lines	1.00	LS	General Contractor	6,013,617	0	6,013,617	2,335,892	8,349,509
04 Dams	1.00	LS	Dam General Contractor	30,135,365	0	30,135,365	7,661,344	37,796,708
05 Samuels Avenue Dam	1.00	LS	Dam General Contractor	22,070,242	0	22,070,242	5,610,940	27,681,182
10 Marine Creek Low Water Dam/Lock	1.00	LS	Dam General Contractor	8,065,122	0	8,065,122	2,050,404	10,115,526
06 Fish and Wildlife Facilities	1.00	LS	General Contractor	6,914,300	28,091	6,942,391	2,695,627	9,638,017
10 Riverside Oxbow/Gateway	1.00	LS	General Contractor	6,492,180	0	6,492,180	2,521,266	9,013,445
05 Rockwood Park	1.00	LS	General Contractor	422,120	28,091	450,211	174,361	624,572
08 Roads, Railroads and Bridges	1.00	LS	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	50,983,881	0	50,983,881	12,961,683	63,945,564
05 Henderson Bridge and Roadway	1.00	LS	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	14,011,776	0	14,011,776	3,562,228	17,574,003
10 White Settlement Bridge and Roadway	1.00	LS	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	10,674,760	0	10,674,760	2,713,855	13,388,615
15 Main Street Bridge and Roadway	1.00	LS	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	14,099,043	0	14,099,043	3,584,414	17,683,456
20 White Settlement Extension Bridge and Roadway	1.00	LS	Bridge and Roadway General Contractor - White Settlement	3,409,784	0	3,409,784	866,873	4,276,657

Description	Quantity	UOM	Contractor	DirectCost	SubCMU	CostToPrime	PrimeCMU	ContractCost
25 Other Street Modifications	1.00	LS	Extension and Bridge Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	2,058,055	0	2,058,055	523,221	2,581,277
30 Riverside Oxbow Park	1.00	LS	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	4,328,895	0	4,328,895	1,100,539	5,429,435
35 Riverside Gateway Park	1.00	LS	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	896,513	0	896,513	227,921	1,124,435
40 Bypass Channel Pedesterian Bridges	1.00	LS	Bridge and Roadway General Contractor - Henderson, Main, and White Settlement	1,505,054	0	1,505,054	382,631	1,887,686
13 Pumping Plants	1.00	LS	General Contractor	3,291,749	266,455	3,558,204	1,381,258	4,939,462
05 Stormwater Pumping Facility	1.00	LS	General Contractor	3,291,749	266,455	3,558,204	1,381,258	4,939,462
14 Recreation Facilities	1.00	LS	General Contractor	13,158,254	1,068,080	14,226,334	5,428,048	19,654,383
05 Water Feature	1.00	LS	General Contractor	7,208,674	585,066	7,793,740	3,025,332	10,819,072
10 Samuels Avenue	1.00	LS	General Contractor	181,093	24,111	205,204	78,975	284,180
15 Marine Creek	1.00	LS	General Contractor	1,811,132	220,940	2,032,073	756,017	2,788,090
20 Ham Branch	1.00	LS	General Contractor	24,360	2,565	26,925	9,834	36,760
25 Riverside Park	1.00	LS	General Contractor	335,003	45,925	380,928	147,232	528,160
30 Rockwood Park - West	1.00	LS	General Contractor	92,641	11,722	104,363	39,805	144,168
35 Riverside Oxbow/Gateway Park	1.00	LS	General Contractor	3,505,351	177,749	3,683,100	1,370,853	5,053,953
15 Flood Control and Diversion Structures	1.00	LS	Isolation Gate General Contractor - Trinity Point	7,523,357	910,290	8,433,646	2,144,094	10,577,741
10 Trinity Point	1.00	LS	Isolation Gate General Contractor - Trinity Point	7,523,357	910,290	8,433,646	2,144,094	10,577,741
30 Planning, Engineering, and Design	1.00	LS		32,717,096	0	0	0	32,717,096
31 Construction Management	1.00	LS		40,432,378	0	0	0	40,432,378
33 HTRW	1.00	LS	Environmental Remediation General Contractor	17,558,239	0	17,558,239	4,463,849	22,022,088
Envrionmental Assessments	1.00	LS	Environmental Remediation General Contractor	1,889,200	0	1,889,200	480,293	2,369,493
Site Remediation	1.00	LS	Environmental	14,002,039	0	14,002,039	3,559,752	17,561,791

Description	Quantity	UOM	Contractor	DirectCost	SubCMU	CostToPrime	PrimeCMU	ContractCost
Remediation Program Management	**1.00**	**LS**	**Remediation General Contractor Environmental Remediation General Contractor**	**1,667,000**	**0**	**1,667,000**	**423,803**	**2,090,803**

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
Project Direct Costs Report				**38,365,214**	**30,392,375**	**47,897,906**	**283,214,667**	**399,870,163**	**233,419,764**	**474,784,054**
01 Federal 220	**1.00**	**LS**		**18,445,135**	**19,524,688**	**23,525,268**	**60,813,451**	**122,308,542**	**79,846,330**	**149,771,957**
(Note: Section 116 of Public Law 108-447, dated 8 December 2004, authorized USACE's participation in construction of the Central City Project. Within that specific authorization, a subset which can be constructed by the USACE and the local sponsor, identified as the USACE's project, was defined at $110,000,000 federal cost and a $220,000,000 total project cost.)										
01 Lands and Damages	**1.00**	**LS**		**0**	**0**	**0**	**31,183,334**	**31,183,334**	**0**	**31,183,334**
(Note: This category includes costs associated with the acquisition of property for the project. The costs were tabulated by the major work element for which it will be acquired and property acquisition assistance costs. The four (4) major work elements are: bypass channel, water feature, valley storage (Riverside/Gateway and Marine Creek. The costs associated with each element of work were determined after review of the mass appraisals performed by James K. Norwood, Certified Real Estate Appraiser. Appraisals were performed on the Central City Project on behalf of the Tarrant Regional Water District and at the Riverside Oxbow/Gateway on behalf of the USACE. Estimated costs in this estimate are based on the best known information at the time of the estimate and may vary from the amounts in the Norwood appraisals given modifications in the project footprint. Costs were normalized to the baseline 2007 by factors provided by the Real Estate Division USACE Fort Worth District. A factor of 6% per year was used for land values and a 15% flat rate was used for administrative fees. Landowner relocation costs were provided by a separate independent relocation study. This category includes anticipated costs for the relocation and moving of current property owners and tenants on the affected property. Costs for relocations of persons and businesses under this section are based on the report prepared by Pinnacle Consulting Management Group, Inc dated February 2, 2005. Costs were adjusted to baseline 2007 cost utilizing factors provided by Pinnacle Group of 4% compounded annually.)										
10 Property Acquisition	**1.00**	**LS**		**0**	**0**	**0**	**26,568,716**	**26,568,716**	**0**	**26,568,716**
USR FED220-01-01 By-Pass Channel Land Acquisition Costs (Note: Includes By-Pass Channel Roadway and White Settlement Roadway. Provided by TRWD)	1.00	LS		0	0	0	24,290,097	24,290,097	0	24,290,097
USR FED220-01-02 Water Feature Land Acquisition Costs (Note: Provided by TRWD)	1.00	LS		0	0	0	0	0	0	0
USR FED220-01-03 Riverside Gateway Land Acquisition Costs (Note: Provided by TRWD)	1.00	LS		0	0	0	2,278,619	2,278,619	0	2,278,619
USR FED220-01-04 Marine Creek Land Acquisition Costs (Note: Provided by TRWD)	1.00	LS		0	0	0	0	0	0	0
15 Property Relocations	**1.00**	**LS**		**0**	**0**	**0**	**4,614,618**	**4,614,618**	**0**	**4,614,618**
USR FED220-01-08 Relocation Costs (Note: Assumes an escalation of 4% per year from 2005 relocation costs.)	1.00	LS		0	0	0	4,614,618	4,614,618	0	4,614,618
03 Reservoirs	**1.00**	**LS**	**Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)**	**7,271,238**	**13,602,961**	**6,868,235**	**2,542,600**	**30,285,034**	**32,511,328**	**40,776,715**
(Note: Samuels Avenue and University Drive are the two original locations which were identified for Valley Storage improvements. The Supplemental EIS added the Rockwood West, Ham Branch, Riverside Park, and the Riverside Oxbow/Gateways sites. Demolition of minor structures inherent to construction activities will be conducted as needed. It is the intent of the local sponsors to develop a recycling and reuse plan to reduce landfill waste. Demolition debris will be recycled or reused beneficially to reduce costs to the extent practicable. Demolition debris that cannot otherwise be used onsite will be hauled to the City of Fort Worth construction debris landfill on Bennen Avenue or the TRWD disposal area. There will be no disposal fees associated with construction debris disposed at either facility. Site improvements include removing unnecessary structures, site grading to allow for more valley storage and construction of new levees. In addition, new flood control structures, seeding and utility replacements are included in the expected costs. The University Drive site primarily consists of roadway and grade modifications/improvements. Borrow material required for University Drive site will be										

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
imported from the bypass channel and valley storage sites. For each of the Valley Storage excavation sites spoils/disposal areas were identified for haul-off of excavated materials. For major sites such as Riverside/Gateway, where haul routes incorporate public roadways, allowances were provided for street sweeping and restoration.)										
05 Valley Storage	**1.00**	**LS**	**Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)**	**7,271,238**	**13,602,961**	**6,868,235**	**2,542,600**	**30,285,034**	**32,511,328**	**40,776,715**
05 Samuels Avenue Sites	**1.00**	**LS**	**Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)**	**752,463**	**2,433,689**	**866,191**	**0**	**4,052,343**	**4,108,605**	**5,153,140**
(Note: An estimated volume of 737,000 BCY of soil and 130,000 BCY of rock will be excavated from the Samuels Avenue north and south sites. The estimated excavation volume from the Samuels Avenue north site is 552,000 BCY (422,000 BCY soil and 130,000 BCY rock). The estimated excavation volume from the Samuels Avenue south site is 315,000 BCY. All the excavated material from the Samuels Avenue north site will be hauled to the city landfill site. All the excavated material will be hauled to the city impound lot. Soil will be dumped, spread, and compacted at each site.)										
Mobilization and Demobilization	**1.00**	**LS**	**Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)**	**5,389**	**9,863**	**0**	**0**	**15,252**	**17,391**	**21,812**
				141.82	*263.18*	*0.00*	*0.00*	*404.99*	*461.78*	*579.18*
USR MOBIL-01 Moblization and Demobilization of Heavy Equipment	34.00	EA	Hauling Subcontractor	4,822	8,948	0	0	13,770	15,700	19,692
				141.82	*228.79*	*0.00*	*0.00*	*370.60*	*422.57*	*530.00*
USR MOBIL-02 Mobilization and Demobilization of Medium Equipment	4.00	EA	Hauling Subcontractor	567	915	0	0	1,482	1,690	2,120
Site Preparation	**1.00**	**LS**	**Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive,**	**208,308**	**533,692**	**2,257**	**0**	**744,257**	**762,145**	**955,905**

Description	Quantity	UOM	Contractor and Rockwood Ecosystem)	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
				0.55	*0.35*	*0.00*	*0.00*	*0.90*	*1.02*	*1.28*
USR DEMO-03 Demolition, handling, and disposal of chainlink fence, 8' to 10' high, 3 strand barbed wire	2,550.00	LF	Demolition Subcontractor	1,400	885	0	0	2,285	2,605	3,268
(Note: Based on 022204201100, 022203503080, 022203300100. Assumes 0.1 cubic yards per linear foot of fence. Assumes 1 ton per cubic yard.)										
				0.48	*0.18*	*0.00*	*0.00*	*0.66*	*0.75*	*0.94*
USR DEMO-04 Demolition, handling, and disposal of mesh reinforced concrete to 6" thick - Concrete Trail	16,500.00	SF	Demolition Subcontractor	7,940	2,935	0	0	10,874	12,399	15,551
(Note: Assumes 0.0188 cubic yards of debris per square foot of concrete. Assumes 2 tons per cubic yard.)										
				0.48	*0.18*	*0.00*	*0.00*	*0.66*	*0.75*	*0.94*
USR DEMO-04 Demolition, handling, and disposal of mesh reinforced concrete to 6" thick - Drainage Swale	4,300.00	SF	Demolition Subcontractor	2,069	765	0	0	2,834	3,231	4,053
(Note: Assumes 0.0188 cubic yards of debris per square foot of concrete. Assumes 2 tons per cubic yard.)										
				0.48	*0.18*	*0.00*	*0.00*	*0.66*	*0.75*	*0.94*
USR DEMO-05 Demolition, handling, and disposal of mesh reinforced concrete to 6" thick, small areas - Area Drain	68.00	SF	Demolition Subcontractor	33	12	0	0	45	51	64
(Note: Based on 022202505800, 022203503080, 022203300100. Assumes 0.0188 cubic yards of debris per square foot of concrete. Assumes 2 tons per cubic yard.)										
				0.77	*0.22*	*0.00*	*0.00*	*1.00*	*1.14*	*1.42*
USR DEMO-06 Demolition, handling, and disposal of 6" to 12" diameter corrugated metal pipe - Area Drain	40.00	LF	Demolition Subcontractor	31	9	0	0	40	45	57
(Note: Based on 022203820150, 022203503080, 022203300100. Assumes 0.0046 cubic yards of debris per linear foot. Assumes 2 tons per cubic yard.)										
				29.19	*30.98*	*0.00*	*0.00*	*60.17*	*68.61*	*86.05*
USR DEMO-01 Demolition, handling, and disposal of reinforced concrete, 7" to 24" thick - 6' x 6' x 7' manhole	6.20	CY	Demolition Subcontractor	181	192	0	0	373	425	534
(Note: Based on 022202505500, 023154904200, 022203300100. Assumes 2 tons per cubic yard.)										
				29.19	*30.98*	*0.00*	*0.00*	*60.17*	*68.61*	*86.05*
USR DEMO-01 Demolition, handling, and disposal of reinforced concrete, 7" to 24" thick - Headwall	15.00	CY	Demolition Subcontractor	438	465	0	0	903	1,029	1,291
(Note: Based on 022202505500, 022203503080, 022203300100. Assumes 2 tons per cubic yard.)										

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
				0.15	*1.13*	*0.00*	*0.00*	*1.28*	*1.28*	*1.60*
USR STPREP-VS08 Scraper w/Operator, strip soil - Samuels Avenue	95,640.00	LCY	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	14,166	107,915	0	0	122,081	122,081	153,118
				0.10	*0.29*	*0.00*	*0.00*	*0.39*	*0.39*	*0.49*
USR STPREP-VS02 Dozer w/Operator, clear, grub and stack - Samuels Avenue	95,640.00	LCY	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	9,358	28,006	0	0	37,364	37,364	46,863
				1.32	*3.42*	*0.00*	*0.00*	*4.74*	*4.74*	*5.95*
USR SITEPREP-01 Screening and Stockpiling of Cleared and Grubbed Material	95,640.00	LCY	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	126,331	327,441	0	0	453,772	453,772	569,135
(Note: Screening of stripped soil. Assumes wheel loader w/operator, screening plant, and laborer. Screened material will be removed from the site. Remaining soil will be stockpiled on-site and used during site restoration.)										
				0.95	*1.36*	*0.00*	*0.00*	*2.30*	*2.63*	*3.30*
USR HWYHAUL-12 Highway Haul, 17 CY End Dump, Removal of Screened Material	47,820.00	LCY	Hauling Subcontractor	45,264	64,958	0	0	110,222	125,676	157,627
(Note: Assumes 1/2 of screened material will be hauled off-site for disposal at the city landfill. Remaining material will be left on-site and used for site restoration.)										
				0.19	*0.00*	*0.34*	*0.00*	*0.53*	*0.53*	*0.67*
USR 023707001100 Erosion control, silt fence, polypropylene, adverse conditions, 3' high	4,800.00	LF	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	921	0	1,632	0	2,553	2,553	3,202
				0.32	*0.22*	*2.25*	*0.00*	*2.79*	*2.79*	*3.50*
USR 023707001250 Erosion	100.00	LF	Valley Storage	32	22	225	0	279	279	350

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
control, hay bales, staked			General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)							
				0.72	*0.44*	*2.00*	*0.00*	*3.16*	*3.16*	*3.96*
USR EROSION-01 Straw Wattles	200.00	LF	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	144	88	400	0	632	632	793
(Note: Material cost per Estimator.)										
				0.26	*1.56*	*0.00*	*0.00*	*1.82*	*1.84*	*2.31*
Excavation and Hauling	**867,000.00**	**BCY**	**Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)**	**228,139**	**1,351,042**	**0**	**0**	**1,579,181**	**1,598,795**	**2,005,258**
				0.15	*1.13*	*0.00*	*0.00*	*1.28*	*1.28*	*1.60*
USR SCRAPER-01 Scraper, 34 CY, Samuels Avenue - North to City Landfill	506,440.00	LCY	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	75,012	571,440	0	0	646,452	646,452	810,800
(Note: Productivity based on estimated average haul distance and number of scrapers used.)										
				0.15	*1.13*	*0.00*	*0.00*	*1.28*	*1.28*	*1.60*
USR SCRAPER-02 Scraper, 34 CY, Samuels Avenue - South to City Impound Lot	378,000.00	LCY	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood	55,988	426,515	0	0	482,503	482,503	605,170

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
			Ecosystem)							
(Note: Productivity based on estimated average haul distance and number of scrapers used.)										
				0.18	*0.80*	*0.00*	*0.00*	*0.98*	*0.98*	*1.23*
HNC 023154183620 Ripping sedimentary rock, dozer with single shank ripper, 300 HP - Samuels Avenue - North	130,000.00	BCY	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	23,524	104,266	0	0	127,790	127,790	160,278
				0.13	*0.34*	*0.00*	*0.00*	*0.47*	*0.47*	*0.59*
USR EXCAV-02 Hyd Excavator, 3 CY, Samuels Avenue North	130,000.00	BCY	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	17,362	43,965	0	0	61,327	61,327	76,918
				0.20	*0.70*	*0.00*	*0.00*	*0.90*	*1.02*	*1.28*
USR OFFRDHAUL-05 6x6 Articulated Off-Road Truck, 24 CY, Samuels Avenue North to City Landfill	156,000.00	LCY	Hauling Subcontractor	30,957	108,929	0	0	139,886	159,499	200,048
(Note: Productivity based on estimated average haul distance, number of excavators and dump trucks used.)										
				0.03	*0.11*	*0.00*	*0.00*	*0.14*	*0.14*	*0.18*
USR DOZEXSP-02 Dozer w/Operator - Samuels Avenue Sites	867,000.00	BCY	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	25,296	95,928	0	0	121,224	121,224	152,043
(Note: Assumes that dozer will be used during excavation activities for general grading and other earthwork activities. Productivity based on maximum number of days over which excavation will occur and the volume excavated.)										
				0.16	*0.32*	*0.00*	*0.00*	*0.48*	*0.48*	*0.60*
Fill Placement and Compaction	**767,000.00**	**BCY**	**Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive,**	**119,537**	**246,191**	**0**	**0**	**365,727**	**365,727**	**458,707**

Description	Quantity	UOM	Contractor and Rockwood Ecosystem)	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
(Note: Spread and compact dumped fill from Samuels Avenue sites. An estimated 506,400 LCY hauled to the city landfill and 378,000 LCY hauled to the city impound lot.)										
				0.06	*0.23*	*0.00*	*0.00*	*0.29*	*0.29*	*0.36*
USR SPRDFL-02 Backfill, 6" lifts, dozer - Samuels Avenue - Fill at City Land Fill	506,400.00	LCY	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	30,547	115,843	0	0	146,391	146,391	183,608
				0.08	*0.14*	*0.00*	*0.00*	*0.23*	*0.23*	*0.29*
USR COMP-02 Compaction, riding vibrating roller, pad foot, single drum, 84" wide, 6" lifts, 5 passes - Samuels Avenue - Fill at City Land Fill	455,760.00	ECY	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	37,898	65,742	0	0	103,641	103,641	129,990
				0.06	*0.04*	*0.00*	*0.00*	*0.10*	*0.10*	*0.13*
USR SPRDFL-03 Backfill, 6" lifts, dozer - Samuels Avenue - Fill at City Impound Lot	378,000.00	LCY	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	22,802	15,532	0	0	38,334	38,334	48,079
				0.08	*0.14*	*0.00*	*0.00*	*0.23*	*0.23*	*0.29*
USR COMP-03 Compaction, riding vibrating roller, pad foot, single drum, 84" wide, 6" lifts, 5 passes - Samuels Avenue - Fill at City Impound Lot	340,200.00	ECY	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	28,289	49,073	0	0	77,362	77,362	97,030
Drainage	**1.00**	**LS**	**Concrete Subcontractor**	**5,014**	**13**	**15,457**	**0**	**20,483**	**23,355**	**29,293**
				62.67	*0.17*	*193.21*	*0.00*	*256.04*	*291.94*	*366.16*
USR CONC-01 Slab on Grade - Concrete	80.00	CY	Concrete Subcontractor	5,014	13	15,457	0	20,483	23,355	29,293
(Note: Assumes 125 pounds of reinforcing steel per cubic yard of concrete. Concrete material cost based on RS Means CostWorks 2008 item number 03 31 0535 03000 and 03 31 0535 1000 for a 4,000										

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
psi high early strength cement. Material cost based on RS Means CostWorks 2008 item number 03 21 1060 1000 for #3 to #7 under 10 ton job.)										
Site Restoration	**1.00**	**LS**	**Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)**	**186,076**	**292,888**	**848,478**	**0**	**1,327,441**	**1,341,192**	**1,682,165**
				1.36	*1.06*	*0.00*	*0.00*	*2.42*	*2.42*	*3.03*
USR SPRDFL-12 Spread soil from on-site stockpile to rough finish grade, wheel loader, 1-1/2 CY	43,838.00	ECY	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	59,495	46,429	0	0	105,924	105,924	132,853
				2.58	*5.70*	*21.50*	*0.00*	*29.78*	*29.78*	*37.35*
USR STREST-02 Screened loam, spread with 200 H.P. dozer, includes load at pit and haul, 5 miles round trip, excludes compaction	37,725.00	LCY	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	97,330	215,023	811,088	0	1,123,441	1,123,441	1,409,054
RSM STREST-01 For 5 mile haul, add										
				6.80	*7.31*	*16.55*	*0.00*	*30.66*	*34.96*	*43.85*
USR REST-01 Seeding, bermuda grass, chewing with mulch and fertilizer, 3 lb. per M.S.F., tractor spreader	1,651.00	MSF	Landscape Subcontractor	11,231	12,070	27,324	0	50,625	57,723	72,398
(Note: Material cost based on vendor quote per pound and 3 lb. per M.S.F. application rate.)										
				6.80	*7.31*	*3.80*	*0.00*	*17.91*	*20.42*	*25.62*
USR REST-02 Seeding, prairie grass, chewing with mulch and fertilizer, 0.23 lb. per M.S.F., tractor spreader	2,649.00	MSF	Landscape Subcontractor	18,020	19,366	10,066	0	47,452	54,105	67,860
(Note: Material cost based on vendor quote per pound and 0.23 lb. per M.S.F. application rate.)										
10 University Drive	**1.00**	**LS**	**Valley Storage General Contractor||Note|**	**420,054**	**300,121**	**1,560,753**	**325,000**	**2,605,928**	**2,944,607**	**3,693,217**

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
			|(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)							
(Note: Excavated material (an estimated 130,000 BCY) from the Rockwood Park - West site will be brought to the University Drive site. Soil from the Rockwood Park - West site will be spread and compacted.)										
Mobilization and Demobilization	**1.00**	**LS**	**Valley Storage General Contractor||Note| |(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)**	**1,135**	**2,037**	**0**	**0**	**3,171**	**3,616**	**4,535**
				141.82	*263.18*	*0.00*	*0.00*	*404.99*	*461.78*	*579.18*
USR MOBIL-01 Moblization and Demobilization of Heavy Equipment	6.00	EA	Hauling Subcontractor	851	1,579	0	0	2,430	2,771	3,475
				141.82	*228.79*	*0.00*	*0.00*	*370.60*	*422.57*	*530.00*
USR MOBIL-02 Mobilization and Demobilization of Medium Equipment	2.00	EA	Hauling Subcontractor	284	458	0	0	741	845	1,060
Site Preparation	**1.00**	**LS**	**Valley Storage General Contractor||Note| |(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)**	**168,718**	**170,952**	**760**	**0**	**340,429**	**387,998**	**486,639**
				1.37	*0.69*	*0.00*	*0.00*	*2.06*	*2.35*	*2.95*
USR DEMO-07 Demolition, handling, and disposal of reinforced concrete curbs	9,044.00	LF	Demolition Subcontractor	12,377	6,276	0	0	18,653	21,268	26,675
(Note: Based on 023154904000, 022203300100, 022202506100. Assumes 0.066 cubic yards of debris per linear foot. Assumes 2 tons per cubic yard.)										
				29.19	*30.98*	*0.00*	*0.00*	*60.17*	*68.61*	*86.05*
USR DEMO-01 Demolition, handling, and disposal of reinforced concrete, 7" to 24" thick	5,250.00	CY	Demolition Subcontractor	153,249	162,665	0	0	315,914	360,209	451,785
(Note: Based on 022202505500, 022203503080, 022203300100. Assumes 2 tons per cubic yard.)										
				0.48	*0.18*	*0.00*	*0.00*	*0.66*	*0.75*	*0.94*

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
USR DEMO-04 Demolition, handling, and disposal of mesh reinforced concrete to 6" thick	3,310.00	SF	Demolition Subcontractor	1,593	589	0	0	2,181	2,487	3,120
(Note: Based on 022202505800, 022203503080, 022203300100. Assumes 0.0188 cubic yards of debris per square foot of concrete. Assumes 2 tons per cubic yard.)										
				1.24	*1.50*	*0.00*	*0.00*	*2.74*	*3.12*	*3.92*
USR DEMO-08 Demolition, handling, and disposal of bituminous driveays	920.00	SY	Demolition Subcontractor	1,140	1,378	0	0	2,519	2,872	3,602
(Note: Based on 022202505100, 023154904000, 022203300100. Assumes 0.111 cubic yards of debris per square yard. Assumes 1.5 tons per cubic yard.)										
				0.19	*0.00*	*0.34*	*0.00*	*0.53*	*0.53*	*0.67*
USR 023707001100 Erosion control, silt fence, polypropylene, adverse conditions, 3' high	1,500.00	LF	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	288	0	510	0	798	798	1,001
				0.32	*0.22*	*2.25*	*0.00*	*2.79*	*2.79*	*3.50*
USR 023707001250 Erosion control, hay bales, staked	40.00	LF	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	13	9	90	0	112	112	140
				0.72	*0.44*	*2.00*	*0.00*	*3.16*	*3.16*	*3.96*
USR EROSION-01 Straw Wattles	80.00	LF	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	58	35	160	0	253	253	317
(Note: Cost per Estimator.)										
				0.16	*0.43*	*0.00*	*0.00*	*0.59*	*0.59*	*0.74*
Fill Placement and Compaction	**130,000.00**	**BCY**	**Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive,**	**21,085**	**55,800**	**0**	**0**	**76,885**	**76,885**	**96,431**

Description	Quantity	UOM	Contractor and Rockwood Ecosystem)	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
(Note: Spread and compact dumped fill from Rockwood Park West (130,000 BCY).)										
				0.06	*0.23*	*0.00*	*0.00*	*0.29*	*0.29*	*0.36*
USR SPRDFL-11 Backfill, 6" lifts, dozer - University Drive - Fill from Rockwood Park	156,000.00	LCY	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	9,410	35,686	0	0	45,097	45,097	56,562
				0.08	*0.14*	*0.00*	*0.00*	*0.23*	*0.23*	*0.28*
USR COMP-11 Compaction, riding vibrating roller, pad foot, single drum, 84" wide, 6" lifts, 5 passes - University Drive - Fill from Rockwood Park	140,400.00	ECY	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	11,675	20,113	0	0	31,788	31,788	39,870
Site Restoration	**1.00**	**LS**	**Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)**	**15,235**	**26,185**	**60,930**	**0**	**102,349**	**112,717**	**141,373**
				0.02	*0.06*	*0.00*	*0.00*	*0.08*	*0.08*	*0.11*
USR GRADE-01 Site Grading - Level Ground	24,776.00	SY	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	560	1,524	0	0	2,085	2,085	2,615
				0.09	*0.26*	*0.00*	*0.00*	*0.35*	*0.35*	*0.44*
USR GRADE-02 Site Grading - Varying Slope	75,200.00	SY	Valley Storage General Contractor||Note||(Note: Rockwood Park, University	7,076	19,245	0	0	26,321	26,321	33,013

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
			Drive, and Rockwood Ecosystem)							
				37.70	*5.63*	*630.00*	*0.00*	*673.33*	*767.74*	*962.92*
RSM 029204001200 Sodding, bent grass sod, on level ground, 1000 S.F. or less	78.85	MSF	Landscape Subcontractor	2,973	444	49,676	0	53,092	60,536	75,926
				6.80	*7.31*	*16.55*	*0.00*	*30.66*	*34.96*	*43.85*
USR REST-01 Seeding, bermuda grass, chewing with mulch and fertilizer, 3 lb. per M.S.F., tractor spreader	680.00	MSF	Landscape Subcontractor	4,626	4,971	11,254	0	20,851	23,774	29,819
(Note: Material cost based on vendor quote per pound and 3 lb. per M.S.F. application rate.)										
Pavement, Sidewalks, Curbs, and Gutter	**1.00**	**LS**	**Valley Storage General Contractor||Note| |(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)**	**80,688**	**18,242**	**928,926**	**25,000**	**1,052,856**	**1,194,772**	**1,498,520**
				0.69	*0.00*	*2.27*	*0.00*	*2.96*	*3.37*	*4.23*
USR PVSWCG-01 Sidewalk, concrete, cast-in-place with 6 x 6 - W1.4 x W1.4 mesh, broomed finish, 3000 psi, 5" thick, excludes base	22,500.00	SF	Concrete Subcontractor	15,445	0	51,075	0	66,520	75,847	95,129
(Note: Cost and productivity based on RS MEANS 2008 Costworks Item 32 06 1010 0350.)										
				1.77	*1.40*	*38.00*	*0.00*	*41.17*	*46.94*	*58.88*
RSM 027403100812 Asphaltic concrete pavement, for highways and large paved areas, binder course, 3" thick, for paving projects 300 tons or less add for trucking	2,000.00	TON	Concrete Subcontractor	3,542	2,802	76,000	0	82,344	93,890	117,759
				2.86	*2.17*	*41.00*	*0.00*	*46.03*	*52.48*	*65.83*
RSM 027403100850 Asphaltic concrete pavement, for highways and large paved areas, wearing course, 1" thick, for paving projects 300 tons or less add for trucking	670.00	TON	Concrete Subcontractor	1,914	1,456	27,470	0	30,840	35,164	44,103
				1.90	*0.66*	*30.21*	*0.00*	*32.77*	*37.37*	*46.87*
USR CONC-12 Concrete	20,800.00	SY	Concrete	39,578	13,688	628,430	0	681,696	777,277	974,885

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
pavement, 8" thick, 12' pass, const. joint, finishing, and curing			Subcontractor							
(Note: Finishing small areas, belt dragged. 10" thick const. joint. Curing w/sprayed membrane. Based on 027503000100, 027503000702, 027503000745, and 027503001000.)										
				8.15	*0.00*	*108.00*	*0.00*	*116.15*	*132.43*	*166.10*
HNC 027703000240 Curbs, and gutter, reinforced concrete, cast in place, excludes forms	815.00	CY	Concrete Subcontractor	6,639	0	88,020	0	94,659	107,931	135,371
				1.17	*0.00*	*3.80*	*0.00*	*4.97*	*5.66*	*7.10*
RSM 027703000410 Curbs, concrete, steel forms, straight, 6" x 18", cast-in-place	9,044.00	LF	Concrete Subcontractor	10,559	0	34,367	0	44,926	51,225	64,248
				0.73	*0.00*	*2.65*	*0.00*	*3.38*	*3.86*	*4.84*
USR PVSWCG-02 Sidewalk, concrete, cast-in-place with 6 x 6 - W1.4 x W1.4 mesh, broomed finish, 3000 psi, 6" thick, excludes base	3,305.00	SF	Concrete Subcontractor	2,424	0	8,758	0	11,183	12,751	15,992
(Note: Cost and productivity based on RS MEANS 2008 Costworks Item 32 06 1010 0400.)										
				0.65	*0.33*	*16.45*	*0.00*	*17.43*	*17.43*	*21.86*
RSM 028402000012 Guide/Guard rail, corrugated steel, galvanized steel posts, steel posts 6' - 3" O.C., W6x8 posts	900.00	LF	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	588	296	14,805	0	15,689	15,689	19,678
USR 03-01 Pavement Markings and Signals	1.00	LS	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	0	0	0	25,000	25,000	25,000	31,356
(Note: Per Estimator)										
Retaining Wall	**1.00**	**LS**	**Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)**	**93,827**	**18,811**	**249,051**	**0**	**361,689**	**406,334**	**509,637**

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
				74.64	*20.54*	*157.00*	*0.00*	*252.18*	*287.54*	*360.65*
RSM 028301002600 Retaining walls, concrete gravity wall with vertical face, 33 degree slope embankment, 10' high, includes excavation & backfill, excludes reinforcing	900.00	LF	Concrete Subcontractor	67,180	18,486	141,300	0	226,966	258,789	324,581
				266.87	*0.00*	*845.00*	*0.00*	*1,111.87*	*1,267.77*	*1,590.08*
RSM 032106001100 Reinforcing steel, in place, typical, average, 50 to 100 ton job, #3 to #7, A615, grade 60, incl access. Labor	82.25	TON	Concrete Subcontractor	21,950	0	69,501	0	91,452	104,274	130,784
				5.22	*0.36*	*42.50*	*0.00*	*48.08*	*48.08*	*60.30*
HNC 055207400050 Railing, commercial, balcony, aluminum, 1-1/2" posts, field fabricated, incl 3 rails	900.00	LF	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	4,697	325	38,250	0	43,271	43,271	54,272
Drainage and Sewerage	**1.00**	**LS**	**Utility Subcontractor**	**39,367**	**8,095**	**321,087**	**0**	**368,548**	**420,222**	**527,056**
				6.29	*1.24*	*32.00*	*0.00*	*39.53*	*45.07*	*56.53*
RSM 026305302040 Reinforced concrete pipe (RCP), 24" diameter, 8' lengths, class 3, excludes excavation or backfill, gaskets	2,435.00	LF	Utility Subcontractor	15,314	3,021	77,920	0	96,255	109,751	137,653
				2.73	*0.73*	*13.25*	*0.00*	*16.72*	*19.06*	*23.91*
RSM 026305302200 Reinforced concrete pipe (RCP), with gaskets, 12" diameter, 6' lengths, class 3, excludes excavation or backfill	730.00	LF	Utility Subcontractor	1,995	535	9,673	0	12,203	13,914	17,452
				31.45	*6.20*	*350.00*	*0.00*	*387.65*	*442.00*	*554.37*
HNC 026305302910 Reinforced concrete pipe (RCP), precast end section, 24" diameter pipe, excludes excavation or backfill	2.00	EA	Utility Subcontractor	63	12	700	0	775	884	1,109
				265.97	*92.41*	*1,075.00*	*0.00*	*1,433.38*	*1,634.35*	*2,049.85*
RSM 026304001130 Manholes, concrete, precast, 4' I.D., 8' deep, excludes base, excavation,	9.00	EA	Utility Subcontractor	2,394	832	9,675	0	12,900	14,709	18,449

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
backfill, frame and cover										
				43.18	*15.51*	*173.00*	*0.00*	*231.69*	*264.18*	*331.34*
RSM 026304001300 Manhole slab top, precast concrete, 4' diameter manhole, 8" thick top	9.00	EA	Utility Subcontractor	389	140	1,557	0	2,085	2,378	2,982
				129.61	*45.03*	*710.00*	*0.00*	*884.65*	*1,008.68*	*1,265.12*
RSM 026304001110 Manholes, concrete, precast, 4' I.D., 4' deep, excludes base, excavation, backfill, frame and cover	18.00	EA	Utility Subcontractor	2,333	811	12,780	0	15,924	18,156	22,772
				187.05	*0.00*	*475.00*	*0.00*	*662.05*	*754.88*	*946.79*
RSM 026301101582 Catch basins, curb inlet frame, grate, and curb box, large, heavy duty, 24" x 36", excludes footing, excavation, and backfill	18.00	EA	Utility Subcontractor	3,367	0	8,550	0	11,917	13,588	17,042
				265.97	*92.41*	*1,075.00*	*0.00*	*1,433.38*	*1,634.35*	*2,049.85*
USR DRAIN-01 Manholes, concrete, precast, 4' I.D., 8' deep, excludes base, excavation, backfill, frame and cover (Note: For sanitary sewer. Based on 026304001130.)	9.00	EA	Utility Subcontractor	2,394	832	9,675	0	12,900	14,709	18,449
				43.18	*15.51*	*173.00*	*0.00*	*231.69*	*264.18*	*331.34*
USR DRAIN-02 Manhole slab top, precast concrete, 4' diameter manhole, 8" thick top (Note: For sanitary sewer. Based on 026304001300.)	9.00	EA	Utility Subcontractor	389	140	1,557	0	2,085	2,378	2,982
				596.09	*98.51*	*7,000.00*	*0.00*	*7,694.60*	*8,773.46*	*11,003.94*
USR VALVE-01 Adjusting Water Valves (Note: Allowance per Estimator. Cost based on professional judgment.)	9.00	EA	Utility Subcontractor	5,365	887	63,000	0	69,251	78,961	99,035
				596.09	*98.51*	*14,000.00*	*0.00*	*14,694.60*	*16,754.93*	*21,014.55*
USR VALVE-02 Adjusting Gas Valves (Note: Allowance per Estimator. Cost based on professional judgment.)	9.00	EA	Utility Subcontractor	5,365	887	126,000	0	132,251	150,794	189,131
Electrical	**1.00**	**LS**	**Electrical Subcontractor**	**0**	**0**	**0**	**300,000**	**300,000**	**342,063**	**429,026**
USR ELEC-01 Miscellaneous Lighting - University Drive (Note: Per Estimator)	1.00	LS	Electrical Subcontractor	0	0	0	300,000	300,000	342,063	429,026
15 Ham Branch	**1.00**	**LS**	**Valley Storage General Contractor||Note| |(Note:**	**97,815**	**72,219**	**177,705**	**194,000**	**541,739**	**606,968**	**761,278**

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
			Rockwood Park, University Drive, and Rockwood Ecosystem)							
(Note: An estimated 3,000 BCY of material will be excavated and used for the Ham Branch Levee. Soil will be dumped, spread, and compacted at each site.)										
Mobilization and Demobilization	**1.00**	**LS**	**Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)**	**2,836**	**5,195**	**0**	**0**	**8,031**	**9,157**	**11,485**
				141.82	*263.18*	*0.00*	*0.00*	*404.99*	*461.78*	*579.18*
USR MOBIL-01 Moblization and Demobilization of Heavy Equipment	18.00	EA	Hauling Subcontractor	2,553	4,737	0	0	7,290	8,312	10,425
				141.82	*228.79*	*0.00*	*0.00*	*370.60*	*422.57*	*530.00*
USR MOBIL-02 Mobilization and Demobilization of Medium Equipment	2.00	EA	Hauling Subcontractor	284	458	0	0	741	845	1,060
Site Preparation	**1.00**	**LS**	**Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)**	**18,202**	**33,829**	**760**	**0**	**52,791**	**55,264**	**69,313**
				1.37	*0.69*	*0.00*	*0.00*	*2.06*	*2.35*	*2.95*
USR DEMO-07 Demolition, handling, and disposal of reinforced concrete curbs	1,360.00	LF	Demolition Subcontractor	1,861	944	0	0	2,805	3,198	4,011
(Note: Based on 023154904000, 022203300100, 022202506100. Assumes 0.066 cubic yards of debris per linear foot. Assumes 2 tons per cubic yard.)										
				0.48	*0.18*	*0.00*	*0.00*	*0.66*	*0.75*	*0.94*
USR DEMO-04 Demolition, handling, and disposal of mesh reinforced concrete to 6" thick	5,040.00	SF	Demolition Subcontractor	2,425	896	0	0	3,322	3,787	4,750
(Note: Based on 022202505800, 022203503080, 022203300100. Assumes 0.0188 cubic yards of debris per square foot of concrete. Assumes 2 tons per cubic yard.)										
				1.24	*1.50*	*0.00*	*0.00*	*2.74*	*3.12*	*3.92*
USR DEMO-08 Demolition, handling, and disposal of bituminous driveays	1,820.00	SY	Demolition Subcontractor	2,256	2,727	0	0	4,983	5,681	7,126

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
(Note: Based on 022202505100, 023154904000, 022203300100. Assumes 0.111 cubic yards of debris per square yard. Assumes 1.5 tons per cubic yard.)										
				0.10	*0.79*	*0.00*	*0.00*	*0.89*	*0.89*	*1.12*
USR STPREP-VS09 Scraper w/Operator, strip soil - Ham Branch	5,664.00	LCY	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	585	4,455	0	0	5,040	5,040	6,321
				0.10	*0.27*	*0.00*	*0.00*	*0.37*	*0.37*	*0.46*
USR STPREP-VS03 Dozer w/Operator, clear, grub and stack - Ham Branch	5,664.00	LCY	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	554	1,524	0	0	2,078	2,078	2,607
				1.32	*3.42*	*0.00*	*0.00*	*4.74*	*4.74*	*5.95*
USR SITEPREP-01 Screening and Stockpiling	5,664.00	LCY	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	7,482	19,392	0	0	26,873	26,873	33,705
(Note: Screening of stripped soil. Assumes wheel loader w/operator, screening plant, and laborer.)										
				0.95	*1.36*	*0.00*	*0.00*	*2.30*	*2.63*	*3.30*
USR HWYHAUL-12 Highway Haul, 17 CY End Dump, Removal of Screened Material	2,832.00	LCY	Hauling Subcontractor	2,681	3,847	0	0	6,528	7,443	9,335
(Note: Assumes 1/2 of screened material will be hauled off-site for disposal at the city landfill. Remaining material will be left on-site and used for site restoration.)										
				0.19	*0.00*	*0.34*	*0.00*	*0.53*	*0.53*	*0.67*
USR 023707001100 Erosion control, silt fence, polypropylene, adverse conditions, 3' high	1,500.00	LF	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	288	0	510	0	798	798	1,001
				0.32	*0.22*	*2.25*	*0.00*	*2.79*	*2.79*	*3.50*
USR 023707001250 Erosion	40.00	LF	Valley Storage	13	9	90	0	112	112	140

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
control, hay bales, staked			General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)							
				0.72	*0.44*	*2.00*	*0.00*	*3.16*	*3.16*	*3.96*
USR EROSION-01 Straw Wattles	80.00	LF	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	58	35	160	0	253	253	317
(Note: Cost per Estimator.)										
				0.53	*1.62*	*0.00*	*0.00*	*2.16*	*2.27*	*2.85*
Excavation and Hauling	**3,000.00**	**BCY**	**Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)**	**1,592**	**4,874**	**0**	**0**	**6,466**	**6,824**	**8,559**
				0.27	*0.68*	*0.00*	*0.00*	*0.94*	*0.94*	*1.18*
USR EXCAV-05 Hyd Excavator, 3 CY, Ham Branch	3,000.00	BCY	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	801	2,029	0	0	2,830	2,830	3,550
				0.16	*0.55*	*0.00*	*0.00*	*0.71*	*0.81*	*1.01*
USR OFFRDHAUL-01 6x6 Articulated Off-Road Truck, 24 CY, Ham Branch to Ham Branch Levee	3,600.00	LCY	Hauling Subcontractor	565	1,988	0	0	2,554	2,912	3,652
(Note: Productivity from time study conducted on potential haul routes.)										
				0.08	*0.29*	*0.00*	*0.00*	*0.36*	*0.36*	*0.45*
USR DOZEXSP-04 Dozer w/Operator - Ham Branch	3,000.00	BCY	Valley Storage General	226	856	0	0	1,082	1,082	1,357

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
			Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)							
(Note: Assumes that dozer will be used during excavation activities for general grading and other earthwork activities. Productivity based on maximum number of days over which excavation will occur and the volume excavated.)										
				0.16	*0.43*	*0.00*	*0.00*	*0.59*	*0.59*	*0.74*
Fill Placement and Compaction	**19,000.00**	**BCY**	**Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)**	**3,082**	**8,155**	**0**	**0**	**11,237**	**11,237**	**14,094**
(Note: Spread and compact dumped fill from Ham Branch (3,000 BCY) and Riverside Park (16,000 BCY) sites. Excavation and hauling of material from Riverside Park is included in the costs for Valley Storage - Riverside Park.)										
				0.06	*0.23*	*0.00*	*0.00*	*0.29*	*0.29*	*0.36*
USR SPRDFL-05 Backfill, 6" lifts, dozer - Fill at Ham Branch Levee	22,800.00	LCY	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	1,375	5,216	0	0	6,591	6,591	8,267
				0.08	*0.14*	*0.00*	*0.00*	*0.23*	*0.23*	*0.28*
USR COMP-05 Compaction, riding vibrating roller, pad foot, single drum, 84" wide, 6" lifts, 5 passes - Fill at Ham Branch Levee	20,520.00	ECY	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	1,706	2,940	0	0	4,646	4,646	5,827
Site Restoration	**1.00**	**LS**	**Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood**	**6,150**	**6,675**	**21,205**	**0**	**34,030**	**35,126**	**44,056**

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
			Ecosystem)							
				1.36	*1.06*	*0.00*	*0.00*	*2.42*	*2.42*	*3.03*
USR SPRDFL-12 Spread soil from on-site stockpile to rough finish grade, wheel loader, 1-1/2 CY	2,549.00	ECY	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	3,459	2,700	0	0	6,159	6,159	7,725
				1.21	*2.67*	*21.50*	*0.00*	*25.38*	*25.38*	*31.83*
USR STREST-02 Screened loam, spread with 200 H.P. dozer, includes load at pit and haul, 5 miles round trip, excludes compaction	790.00	LCY	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	956	2,111	16,985	0	20,052	20,052	25,150
				6.80	*7.31*	*16.55*	*0.00*	*30.66*	*34.96*	*43.85*
USR REST-01 Seeding, bermuda grass, chewing with mulch and fertilizer, 3 lb. per M.S.F., tractor spreader	255.00	MSF	Landscape Subcontractor	1,735	1,864	4,220	0	7,819	8,915	11,182
(Note: Material cost based on vendor quote per pound and 3 lb. per M.S.F. application rate.)										
Pavement, Sidewalks, Curbs, and Gutter	**1.00**	**LS**	**Concrete Subcontractor**	**13,953**	**9,011**	**95,499**	**0**	**118,464**	**135,074**	**169,414**
				0.04	*0.09*	*0.74*	*0.00*	*0.86*	*0.98*	*1.24*
RSM 027603000710 Lines on pavement, thermoplastic, white or yellow, 4" wide	5,440.00	LF	Concrete Subcontractor	208	465	4,026	0	4,699	5,358	6,720
				0.77	*1.01*	*40.00*	*0.00*	*41.77*	*47.63*	*59.74*
RSM 027503000400 Plain cement concrete pavement, fixed form, unreinforced, 12' pass, 12" thick, includes joints, finishing, and curing	1,815.00	SY	Concrete Subcontractor	1,397	1,825	72,600	0	75,821	86,452	108,431
				2.31	*0.00*	*0.00*	*0.00*	*2.31*	*2.63*	*3.30*
RSM 027503000700 Plain cement concrete pavement, finishing, small areas, broom finish	1,815.00	SY	Concrete Subcontractor	4,191	0	0	0	4,191	4,778	5,993
				1.13	*0.00*	*1.42*	*0.00*	*2.55*	*2.91*	*3.64*
HNC 027503000745 Plain	150.00	LF	Concrete	169	0	213	0	382	436	547

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
cement concrete pavement, construction joint, 10" thick			Subcontractor							
				1.50	*3.70*	*0.00*	*0.00*	*5.21*	*5.94*	*7.45*
RSM 027503003200 Plain cement concrete pavement, concrete grooving, continuous for roadways	1,815.00	SY	Concrete Subcontractor	2,728	6,721	0	0	9,449	10,774	13,514
				8.15	*0.00*	*108.00*	*0.00*	*116.15*	*132.43*	*166.10*
HNC 027703000240 Curbs, and gutter, reinforced concrete, cast in place, excludes forms	100.00	CY	Concrete Subcontractor	815	0	10,800	0	11,615	13,243	16,610
				1.63	*0.00*	*2.89*	*0.00*	*4.52*	*5.16*	*6.47*
RSM 027703000300 Curbs, concrete, wood forms, straight, 6" x 18", cast-in-place	2,720.00	LF	Concrete Subcontractor	4,446	0	7,861	0	12,307	14,032	17,599
Retaining Walls	**1.00**	**LS**	**Concrete Subcontractor**	**52,000**	**4,480**	**60,240**	**194,000**	**310,720**	**354,286**	**444,357**
				0.00	*0.00*	*0.00*	*20.00*	*20.00*	*22.80*	*28.60*
USR CONC-06 Concrete Revetment (Note: Per Estimator. Cost based on previous work of similar scope.)	9,700.00	SF	Concrete Subcontractor	0	0	0	194,000	194,000	221,201	277,437
				225.00	*20.00*	*130.00*	*0.00*	*375.00*	*427.58*	*536.28*
USR CONC-03 Concrete walls - sewer structural modifications (Note: Per Estimator. Cost based on previous work of similar scope. Assumes concrete pumping.)	192.00	CY	Concrete Subcontractor	43,200	3,840	24,960	0	72,000	82,095	102,966
				275.00	*20.00*	*140.00*	*0.00*	*435.00*	*495.99*	*622.09*
USR CONC-04 Concrete elevated slabs - sewer structural modifications (Note: Per Estimator. Cost based on previous work of similar scope. Assumes concrete pumping.)	32.00	CY	Concrete Subcontractor	8,800	640	4,480	0	13,920	15,872	19,907
				0.00	*0.00*	*0.55*	*0.00*	*0.55*	*0.63*	*0.79*
USR CONC-05 Reinforcing bar - 175 lbs/cy - sewer structural modifcations (Note: Per Estimator)	56,000.00	LB	Concrete Subcontractor	0	0	30,800	0	30,800	35,118	44,047
20 Riverside Park	**1.00**	**LS**	**Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)**	**488,004**	**740,598**	**280,781**	**149,400**	**1,658,783**	**1,790,572**	**2,245,791**

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
(Note: An estimated total volume of 302,000 BCY at Riverside Park will be excavated and hauled to the Ham Branch Levee (16,000 BCY) and the city land fill/city impound lot (286,000 BCY). Soil will be dumped, spread, and compacted at each site.)										
Mobilization and Demobilization	**1.00**	**LS**	**Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)**	**3,120**	**5,652**	**0**	**0**	**8,772**	**10,002**	**12,545**
USR MOBIL-01 Moblization and Demobilization of Heavy Equipment	18.00	EA	Hauling Subcontractor	*141.82* 2,553	*263.18* 4,737	*0.00* 0	*0.00* 0	*404.99* 7,290	*461.78* 8,312	*579.18* 10,425
USR MOBIL-02 Mobilization and Demobilization of Medium Equipment	4.00	EA	Hauling Subcontractor	*141.82* 567	*228.79* 915	*0.00* 0	*0.00* 0	*370.60* 1,482	*422.57* 1,690	*530.00* 2,120
Site Preparation	**1.00**	**LS**	**Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)**	**87,721**	**123,825**	**20,930**	**0**	**232,476**	**251,931**	**315,979**
USR DEMO-08 Demolition, handling, and disposal of bituminous driveays	5,300.00	SY	Demolition Subcontractor	*1.24* 6,569	*1.50* 7,941	*0.00* 0	*0.00* 0	*2.74* 14,510	*3.12* 16,544	*3.92* 20,751
(Note: Based on 022202505100, 023154904000, 022203300100. Assumes 0.111 cubic yards of debris per square yard. Assumes 1.5 tons per cubic yard.)										
USR DEMO-02 Demolition, handling, and disposal of building debris	44,250.00	CF	Demolition Subcontractor	*0.04* 1,930	*0.12* 5,249	*0.00* 0	*0.00* 0	*0.16* 7,178	*0.18* 8,185	*0.23* 10,265
(Note: Based on 022201108010, 022203503080, 022203300100. Assumes 0.002875 cubic yards of debris per cubic foot of building. Assumes 2 tons per cubic yard.)										
USR DEMO-09 Demolition, handling, and disposal of pipe fence	800.00	LF	Demolition Subcontractor	*0.92* 740	*0.75* 603	*0.00* 0	*0.00* 0	*1.68* 1,343	*1.91* 1,531	*2.40* 1,921
(Note: Based on 022204220500, 023154904200, 022203300100. Assumes 0.1375 cubic yards per linear foot of fence. Assumes 1 ton per cubic yard.)										
USR DEMO-10 Demolition,	1,600.00	LF	Demolition	*2.79* 4,470	*5.91* 9,451	*0.00* 0	*0.00* 0	*8.70* 13,921	*9.92* 15,873	*12.44* 19,909

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
handling, and disposal of 18" diameter concrete pipe			Subcontractor							
(Note: Based on 022203810100, 023154904200, 022203300100. Assumes 0.042 cubic yards per linear foot of concrete pipe. Assumes 0.084 ton per cubic yard.)										
				4.79	*10.13*	*0.00*	*0.00*	*14.91*	*17.01*	*21.33*
USR DEMO-11 Demolition, handling, and disposal of 36" diameter concrete pipe	450.00	LF	Demolition Subcontractor	2,154	4,557	0	0	6,711	7,652	9,598
(Note: Based on 022203810100, 023154904200, 022203300100. Assumes 0.162 cubic yards per linear foot of concrete pipe. Assumes 0.262 ton per cubic yard.)										
				5,000.00	*2,500.00*	*5,000.00*	*0.00*	*12,500.00*	*14,252.63*	*17,876.08*
USR DEMO-19 Cut and plug pipe	4.00	EA	Utility Subcontractor	20,000	10,000	20,000	0	50,000	57,011	71,504
(Note: Per Estimator. Cost based on previous work of similar scope.)										
				0.48	*0.18*	*0.00*	*0.00*	*0.66*	*0.75*	*0.94*
USR DEMO-05 Demolition, handling, and disposal of mesh reinforced concrete to 6" thick, small areas	22,500.00	SF	Demolition Subcontractor	10,827	4,002	0	0	14,829	16,908	21,206
(Note: Based on 022202505800, 023154904200, 022203300100. Assumes 0.0188 cubic yards of debris per square foot of concrete. Assumes 2 tons per cubic yard.)										
				0.55	*0.35*	*0.00*	*0.00*	*0.90*	*1.02*	*1.28*
USR DEMO-12 Demolition, handling, and disposal of chainlink fence, 8' to 10' high - ball field fence	570.00	LF	Demolition Subcontractor	313	198	0	0	511	582	730
(Note: Based on 022204201100, 023154904200, 022203300100. Assumes 0.1 cubic yards per linear foot of fence. Assumes 1 ton per cubic yard.)										
				1,272.52	*298.69*	*0.00*	*0.00*	*1,571.21*	*1,791.51*	*2,246.97*
USR DEMO-13 Demolition, handling, and disposal of athletic field lighting fixtures and poles	8.00	EA	Demolition Subcontractor	10,180	2,390	0	0	12,570	14,332	17,976
(Note: Based on crews EELER3 and CLABB13 and items 023154904200, 022203300100. Assumes 40 linear feet of pole per fixture. Assumes 1.034 cubic yards per fixture. Assumes 0.45 ton per cubic yard for disposal.)										
				0.13	*0.96*	*0.00*	*0.00*	*1.08*	*1.08*	*1.36*
USR STPREP-VS10 Scraper w/Operator, strip soil - Riverside Park	14,910.00	LCY	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	1,874	14,275	0	0	16,149	16,149	20,255
				0.10	*0.26*	*0.00*	*0.00*	*0.36*	*0.36*	*0.45*
USR STPREP-VS04 Dozer w/Operator, clear, grub and stack - Riverside Park	14,910.00	LCY	Valley Storage General Contractor||Note||(Note: Rockwood	1,459	3,941	0	0	5,400	5,400	6,773

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
			Park, University Drive, and Rockwood Ecosystem)							
				1.32	*3.42*	*0.00*	*0.00*	*4.74*	*4.74*	*5.95*
USR SITEPREP-01 Screening and Stockpiling	14,910.00	LCY	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	19,695	51,047	0	0	70,742	70,742	88,727
(Note: Screening of stripped soil. Assumes wheel loader w/operator, screening plant, and laborer.)										
				0.95	*1.36*	*0.00*	*0.00*	*2.30*	*2.63*	*3.30*
USR HWYHAUL-12 Highway Haul, 17 CY End Dump, Removal of Screened Material	7,455.00	LCY	Hauling Subcontractor	7,057	10,127	0	0	17,183	19,593	24,574
(Note: Assumes 1/2 of screened material will be hauled off-site for disposal at the city landfill. Remaining material will be left on-site and used for site restoration.)										
				0.19	*0.00*	*0.34*	*0.00*	*0.53*	*0.53*	*0.67*
USR 023707001100 Erosion control, silt fence, polypropylene, adverse conditions, 3' high	2,000.00	LF	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	384	0	680	0	1,064	1,064	1,334
				0.32	*0.22*	*2.25*	*0.00*	*2.79*	*2.79*	*3.50*
USR 023707001250 Erosion control, hay bales, staked	40.00	LF	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	13	9	90	0	112	112	140
				0.72	*0.44*	*2.00*	*0.00*	*3.16*	*3.16*	*3.96*
USR EROSION-01 Straw Wattles	80.00	LF	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood	58	35	160	0	253	253	317

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
			Ecosystem)							
(Note: Cost per Estimator.)										
				0.88	*1.50*	*0.00*	*0.49*	*2.88*	*3.10*	*3.89*
Excavation and Hauling	**302,000.00**	**BCY**	**Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)**	**265,790**	**453,951**	**0**	**149,400**	**869,141**	**936,667**	**1,174,797**
				0.13	*0.34*	*0.00*	*0.00*	*0.47*	*0.47*	*0.59*
USR EXCAV-03 Hyd Excavator, 3 CY, Riverside Park	302,000.00	BCY	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	40,334	102,133	0	0	142,467	142,467	178,686
				0.46	*0.67*	*0.00*	*0.00*	*1.13*	*1.29*	*1.62*
USR HWYHAUL-03 Highway Haul, 17 CY, Riverside Park to Ham Branch Levee	19,200.00	LCY	Hauling Subcontractor	8,909	12,785	0	0	21,694	24,735	31,024
(Note: Productivity from time study conducted on potential haul routes.)										
				0.55	*0.79*	*0.00*	*0.00*	*1.34*	*1.53*	*1.92*
USR HWYHAUL-04 Highway Haul, 17 CY, Riverside Park to City Landfill/City Impound Lot	343,200.00	LCY	Hauling Subcontractor	188,871	271,044	0	0	459,915	524,400	657,719
(Note: Productivity from time study conducted on potential haul routes.)										
				0.05	*0.19*	*0.00*	*0.00*	*0.24*	*0.24*	*0.31*
USR DOZEXSP-03 Dozer w/Operator - Riverside Park	302,000.00	BCY	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	15,359	58,245	0	0	73,604	73,604	92,316
(Note: Assumes that dozer will be used during excavation activities for general grading and other earthwork activities. Productivity based on maximum number of days over which excavation will occur and the volume excavated.)										
				0.00	*0.00*	*0.00*	*49,800.00*	*49,800.00*	*49,800.00*	*62,460.70*
USR 03-03 Traffic Control	3.00	MO	Valley Storage General	0	0	0	149,400	149,400	149,400	187,382

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
			Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)							
(Note: Per Estimator)										
				0.04	*0.03*	*0.00*	*0.00*	*0.07*	*0.07*	*0.09*
USR MAINT-01 Street sweeping	302,000.00	CY	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	12,317	9,745	0	0	22,061	22,061	27,670
(Note: Based on crew USR-MAINT-01.)										
				0.16	*0.43*	*0.00*	*0.00*	*0.59*	*0.59*	*0.74*
Fill Placement and Compaction	**286,000.00**	**BCY**	**Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)**	**46,375**	**122,713**	**0**	**0**	**169,089**	**169,089**	**212,076**
(Note: Spread and compact dumped fill from Riverside Park (286,000 BCY) at the city landfill and city impound lot. Placement and compaction of material hauled for the Ham Branch Levee is included in the costs for Valley Storage - Ham Branch.)										
				0.06	*0.23*	*0.00*	*0.00*	*0.29*	*0.29*	*0.36*
USR SPRDFL-04 Backfill, 6" lifts, dozer - Riverside Park - Fill at City Landfill/City Impound Lot	343,000.00	LCY	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	20,691	78,464	0	0	99,155	99,155	124,363
				0.08	*0.14*	*0.00*	*0.00*	*0.23*	*0.23*	*0.28*
USR COMP-04 Compaction, riding vibrating roller, pad foot, single drum, 84" wide, 6" lifts, 5 passes - Riverside Park - Fill at City Landfill/City Impound Lot	308,880.00	ECY	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and	25,685	44,249	0	0	69,934	69,934	87,713

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
			Rockwood Ecosystem)							
Site Restoration	**1.00**	**LS**	**Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)**	**18,636**	**16,967**	**85,831**	**0**	**121,434**	**128,856**	**161,615**
USR SPRDFL-12 Spread soil from on-site stockpile to rough finish grade, wheel loader, 1-1/2 CY	6,710.00	ECY	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	*1.36* 9,107	*1.06* 7,107	*0.00* 0	*0.00* 0	*2.42* 16,213	*2.42* 16,213	*3.03* 20,335
USR STREST-02 Screened loam, spread with 200 H.P. dozer, includes load at pit and haul, 5 miles round trip, excludes compaction	2,060.00	LCY	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	*1.21* 2,492	*2.67* 5,505	*21.50* 44,290	*0.00* 0	*25.38* 52,287	*25.38* 52,287	*31.83* 65,580
USR REST-01 Seeding, bermuda grass, chewing with mulch and fertilizer, 3 lb. per M.S.F., tractor spreader (Note: Material cost based on vendor quote per pound and 3 lb. per M.S.F. application rate.)	509.00	MSF	Landscape Subcontractor	*6.80* 3,462	*7.31* 3,721	*16.55* 8,424	*0.00* 0	*30.66* 15,607	*34.96* 17,796	*43.85* 22,320
RSM 029204000020 Sodding, bluegrass sod, on level ground, 1" deep, 8 M.S.F.	141.57	MSF	Landscape Subcontractor	*23.99* 3,397	*3.58* 507	*223.00* 31,570	*0.00* 0	*250.57* 35,474	*285.71* 40,448	*358.34* 50,731
RSM 028201302100 Chain link fence, industrial, chain link fence, no barbed wire, galvanized steel, 2" line post, 10' O.C., 1-5/8" top rail, 5' - 0" high, includes	140.00	LF	Landscape Subcontractor	*1.27* 178	*0.91* 127	*11.05* 1,547	*0.00* 0	*13.23* 1,853	*15.09* 2,112	*18.93* 2,650

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
excavation										
Drainage	**1.00**	**LS**	**Utility Subcontractor**	**20,290**	**8,394**	**59,358**	**0**	**88,043**	**100,387**	**125,909**
RSM 026304001130 Manholes, concrete, precast, 4' I.D., 8' deep, excludes base, excavation, backfill, frame and cover	6.00	EA	Utility Subcontractor	*265.97* 1,596	*92.41* 554	*1,075.00* 6,450	*0.00* 0	*1,433.38* 8,600	*1,634.35* 9,806	*2,049.85* 12,299
RSM 026304001140 Manholes, concrete, precast, 4' I.D., excludes base, excavation, backfill, frame and cover, add for depths over 8'	12.00	VLF	Utility Subcontractor	*33.25* 399	*11.55* 139	*150.00* 1,800	*0.00* 0	*194.80* 2,338	*222.11* 2,665	*278.58* 3,343
RSM 026304001300 Manhole slab top, precast concrete, 4' diameter manhole, 8" thick top	6.00	EA	Utility Subcontractor	*43.18* 259	*15.51* 93	*173.00* 1,038	*0.00* 0	*231.69* 1,390	*264.18* 1,585	*331.34* 1,988
RSM 026305302030 Reinforced concrete pipe (RCP), 18" diameter, 6' lengths, class 3, excludes excavation or backfill, gaskets	1,650.00	LF	Utility Subcontractor	*4.76* 7,861	*0.94* 1,551	*16.30* 26,895	*0.00* 0	*22.00* 36,307	*25.09* 41,398	*31.47* 51,922
RSM 026305302060 Reinforced concrete pipe (RCP), 36" diameter, 8' lengths, class 3, excludes excavation or backfill, gaskets	450.00	LF	Utility Subcontractor	*12.55* 5,646	*6.39* 2,874	*51.50* 23,175	*0.00* 0	*70.43* 31,695	*80.31* 36,139	*100.73* 45,326
HNC 023156100372 Excavating, trench, medium soil, 6' to 10' deep, 2 C.Y. bucket, gradall, excludes sheeting or dewatering	3,700.00	BCY	Utility Subcontractor	*0.21* 789	*0.29* 1,068	*0.00* 0	*0.00* 0	*0.50* 1,857	*0.57* 2,117	*0.72* 2,656
HNC 023151101200 Backfill, trench, 60 H.P. dozer, excludes compaction	2,900.00	LCY	Utility Subcontractor	*0.64* 1,852	*0.55* 1,583	*0.00* 0	*0.00* 0	*1.18* 3,436	*1.35* 3,917	*1.69* 4,913
HNC 023153107260 Compaction, around structures and trenches, walk behind, vibrating plate	2,900.00	ECY	Utility Subcontractor	*0.65* 1,889	*0.18* 532	*0.00* 0	*0.00* 0	*0.83* 2,420	*0.95* 2,760	*1.19* 3,461
Electrical	**1.00**	**LS**	**Electrical**	**46,072**	**9,094**	**114,662**	**0**	**169,828**	**193,640**	**242,869**

Description	Quantity	UOM	Contractor Subcontractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
				226.92	*58.11*	*287.00*	*0.00*	*572.03*	*652.24*	*818.06*
HNC 025805005060 Wood pole, yellow pine, penta-treated, 40', class 3	9.00	EA	Electrical Subcontractor	2,042	523	2,583	0	5,148	5,870	7,363
				2,252.87	*440.01*	*2,900.00*	*0.00*	*5,592.88*	*6,377.06*	*7,998.31*
HNC 163108304350 Overhead to underground conversion, 15 kV, type OU-1-D, incl insulator, cross arm, grounding and fused cutout	9.00	EA	Electrical Subcontractor	20,276	3,960	26,100	0	50,336	57,394	71,985
				35.35	*0.00*	*138.00*	*0.00*	*173.35*	*197.65*	*247.90*
HNC 160608006130 Ground insert, 250-500 kcmil cable range, 4-3/8" x 16" holes, embedded	9.00	EA	Electrical Subcontractor	318	0	1,242	0	1,560	1,779	2,231
				255.08	*77.00*	*400.00*	*0.00*	*732.09*	*834.73*	*1,046.95*
USR ELEC-02 Tie-in to existing service (Note: Based on Crew EELER15. Material cost per Estimator.)	9.00	EA	Electrical Subcontractor	2,296	693	3,600	0	6,589	7,513	9,423
				181.27	*35.40*	*330.00*	*0.00*	*546.67*	*623.32*	*781.78*
HNC 163104000100 Down guying assemblies, 25' to 40' pole	18.00	EA	Electrical Subcontractor	3,263	637	5,940	0	9,840	11,220	14,072
				284.13	*55.49*	*204.00*	*0.00*	*543.62*	*619.84*	*777.42*
HNC 163104001000 Head guying assemblies, 50' span, 25' to 40' pole	18.00	EA	Electrical Subcontractor	5,114	999	3,672	0	9,785	11,157	13,994
				137.13	*26.78*	*8.90*	*0.00*	*172.81*	*197.05*	*247.14*
HNC 163104002000 Insulator, guy strain	36.00	EA	Electrical Subcontractor	4,937	964	320	0	6,221	7,094	8,897
				409.66	*80.01*	*6,525.00*	*0.00*	*7,014.67*	*7,998.19*	*10,031.58*
HNC 163305000560 Load break switch, outdoor, 3 phase, 14.4 kV, 2000 A	9.00	EA	Electrical Subcontractor	3,687	720	58,725	0	63,132	71,984	90,284
				1,293.46	*186.72*	*3,900.00*	*0.00*	*5,380.17*	*6,134.53*	*7,694.11*
HNC 161202601650 Copper cable, stranded, insulated, 400 kcmil, installed on the poles	3.20	MLF	Electrical Subcontractor	4,139	597	12,480	0	17,217	19,630	24,621
25 Rockwood Park - West	**1.00**	**LS**	**Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood**	**330,799**	**546,271**	**140,167**	**99,600**	**1,116,837**	**1,181,106**	**1,481,379**

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
			Ecosystem)							
(Note: An estimated total volume of 148,000 BCY at Rockwood Park - West will be excavated and hauled to the University Drive site (130,000 BCY) and the bypass channel (18,000 BCY).)										
Mobilization and Demobilization	**1.00**	**LS**	**Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)**	**2,269**	**4,142**	**0**	**0**	**6,411**	**7,310**	**9,168**
USR MOBIL-01 Moblization and Demobilization of Heavy Equipment	14.00	EA	Hauling Subcontractor	*141.82* 1,985	*263.18* 3,684	*0.00* 0	*0.00* 0	*404.99* 5,670	*461.78* 6,465	*579.18* 8,108
USR MOBIL-02 Mobilization and Demobilization of Medium Equipment	2.00	EA	Hauling Subcontractor	*141.82* 284	*228.79* 458	*0.00* 0	*0.00* 0	*370.60* 741	*422.57* 845	*530.00* 1,060
Site Preparation	**1.00**	**LS**	**Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)**	**101,615**	**186,415**	**43,066**	**0**	**331,096**	**335,871**	**421,259**
USR HAUL-04 Access Roads	2,800.00	LF	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	*15.00* 42,000	*10.00* 28,000	*15.00* 42,000	*0.00* 0	*40.00* 112,000	*40.00* 112,000	*50.17* 140,474
(Note: Per Estimator. Cost based on professional judgment.)										
USR DEMO-09 Demolition, handling, and disposal of pipe fence	760.00	LF	Demolition Subcontractor	*0.92* 703	*0.75* 573	*0.00* 0	*0.00* 0	*1.68* 1,276	*1.91* 1,455	*2.40* 1,825
(Note: Based on 022204220500, 023154904200, 022203300100. Assumes 0.1375 cubic yards per linear foot of fence. Assumes 1 ton per cubic yard.)										
USR 023154325460 Excavating,	400.00	BCY	Valley Storage	*0.90* 359	*3.76* 1,505	*0.00* 0	*0.00* 0	*4.66* 1,864	*4.66* 1,864	*5.84* 2,338

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
bulk, open site, bank measure, medium material, 335 H.P. dozer, 150' push			General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)							
				0.15	*1.13*	*0.00*	*0.00*	*1.28*	*1.28*	*1.60*
USR STPREP-VS07 Scraper w/Operator, strip soil - Rockwood Park West	28,440.00	LCY	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	4,212	32,090	0	0	36,303	36,303	45,532
				0.10	*0.26*	*0.00*	*0.00*	*0.36*	*0.36*	*0.45*
USR STPREP-VS01 Dozer w/Operator, clear, grub and stack - Rockwood Park West	28,440.00	LCY	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	2,783	7,518	0	0	10,301	10,301	12,919
				1.32	*3.42*	*0.00*	*0.00*	*4.74*	*4.74*	*5.95*
USR SITEPREP-01 Screening and Stockpiling	28,440.00	LCY	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	37,567	97,370	0	0	134,936	134,936	169,241
(Note: Screening of stripped soil. Assumes wheel loader w/operator, screening plant, and laborer.)										
				0.95	*1.36*	*0.00*	*0.00*	*2.30*	*2.63*	*3.30*
USR HWYHAUL-12 Highway Haul, 17 CY End Dump, Removal of Screened Material	14,220.00	LCY	Hauling Subcontractor	13,460	19,316	0	0	32,776	37,372	46,873
(Note: Assumes 1/2 of screened material will be hauled off-site for disposal at the city landfill. Remaining material will be left on-site and used for site restoration.)										
				0.19	*0.00*	*0.34*	*0.00*	*0.53*	*0.53*	*0.67*
USR 023707001100 Erosion control, silt fence, polypropylene, adverse conditions, 3' high	2,400.00	LF	Valley Storage General Contractor||Note||(Note: Rockwood	461	0	816	0	1,277	1,277	1,601

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
			Park, University Drive, and Rockwood Ecosystem)							
				0.32	*0.22*	*2.25*	*0.00*	*2.79*	*2.79*	*3.50*
USR 023707001250 Erosion control, hay bales, staked	40.00	LF	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	13	9	90	0	112	112	140
				0.72	*0.44*	*2.00*	*0.00*	*3.16*	*3.16*	*3.96*
USR EROSION-01 Straw Wattles	80.00	LF	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	58	35	160	0	253	253	317
(Note: Cost per Estimator.)										
				1.30	*2.12*	*0.00*	*0.67*	*4.09*	*4.45*	*5.59*
Excavation and Hauling	**148,000.00**	**BCY**	**Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)**	**192,255**	**313,397**	**0**	**99,600**	**605,253**	**659,230**	**826,827**
				0.13	*0.34*	*0.00*	*0.00*	*0.47*	*0.47*	*0.59*
USR EXCAV-01 Hyd Excavator, 3 CY, Rockwood Park	148,000.00	BCY	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	19,766	50,052	0	0	69,818	69,818	87,568
				0.88	*1.26*	*0.00*	*0.00*	*2.13*	*2.43*	*3.05*
USR HWYHAUL-01 Highway Haul, 17 CY, Rockwood Park -	156,000.00	LCY	Hauling Subcontractor	136,725	196,210	0	0	332,935	379,616	476,126

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
West Side to University Drive (Note: Productivity from time study conducted on potential haul routes.)										
				0.99	*1.42*	*0.00*	*0.00*	*2.41*	*2.75*	*3.45*
USR HWYHAUL-02 Highway Haul, 17 CY, Rockwood Park - West Side to Bypass Channel (Note: Productivity from time study conducted on potential haul routes.)	21,600.00	LCY	Hauling Subcontractor	21,372	30,670	0	0	52,042	59,339	74,424
				0.06	*0.21*	*0.00*	*0.00*	*0.27*	*0.27*	*0.34*
USR DOZEXSP-01 Dozer w/Operator - Rockwood Park West (Note: Assumes that dozer will be used during excavation activities for general grading and other earthwork activities. Productivity based on maximum number of days over which excavation will occur and the volume excavated.)	148,000.00	BCY	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	8,356	31,689	0	0	40,046	40,046	50,227
				0.04	*0.03*	*0.00*	*0.00*	*0.07*	*0.07*	*0.09*
USR MAINT-01 Street sweeping (Note: Based on crew USR-MAINT-01.)	148,000.00	CY	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	6,036	4,775	0	0	10,812	10,812	13,560
				0.00	*0.00*	*0.00*	*49,800.00*	*49,800.00*	*49,800.00*	*62,460.70*
USR 03-03 Traffic Control (Note: Per Estimator)	2.00	MO	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	0	0	0	99,600	99,600	99,600	124,921
				2,919.49	*8,312.27*	*0.00*	*0.00*	*11,231.76*	*11,231.76*	*14,087.22*
Fill Placement and Compaction	**1.00**	**EA**	**Valley Storage General Contractor||Note||(Note: Rockwood Park,**	**2,919**	**8,312**	**0**	**0**	**11,232**	**11,232**	**14,087**

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
			University Drive, and Rockwood Ecosystem)							
				0.06	*0.25*	*0.00*	*0.00*	*0.31*	*0.31*	*0.38*
USR SPRDFL-01 Backfill, 6" lifts, dozer - Rockwood Park - Fill at Bypass Channel	21,600.00	LCY	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	1,303	5,296	0	0	6,599	6,599	8,277
				0.08	*0.16*	*0.00*	*0.00*	*0.24*	*0.24*	*0.30*
USR COMP-01 Compaction, riding vibrating roller, pad foot, single drum, 84" wide, 6" lifts, 5 passes - Rockwood Park - Fill at Bypass Channel	19,440.00	ECY	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	1,617	3,016	0	0	4,633	4,633	5,810
Site Restoration	**1.00**	**LS**	**Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)**	**31,741**	**34,004**	**97,101**	**0**	**162,846**	**167,463**	**210,037**
				1.36	*1.06*	*0.00*	*0.00*	*2.42*	*2.42*	*3.03*
USR SPRDFL-12 Spread soil from on-site stockpile to rough finish grade, wheel loader, 1-1/2 CY	12,798.00	ECY	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	17,369	13,554	0	0	30,923	30,923	38,785
				1.21	*2.67*	*21.50*	*0.00*	*25.38*	*25.38*	*31.83*
USR STREST-02 Screened loam, spread with 200 H.P. dozer, includes load at pit and haul, 5 miles round trip, excludes compaction	3,900.00	LCY	Valley Storage General Contractor||Note||(Note: Rockwood Park, University	4,718	10,422	83,850	0	98,990	98,990	124,156

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
			Drive, and Rockwood Ecosystem)							
				6.80	*7.31*	*3.80*	*0.00*	*17.91*	*20.42*	*25.62*
USR REST-02 Seeding, prairie grass, chewing with mulch and fertilizer, 3 lb. per M.S.F., tractor spreader	1,277.00	MSF	Landscape Subcontractor	8,687	9,336	4,853	0	22,875	26,082	32,713
(Note: Material cost based on vendor quote per pound and 0.23 lb. per M.S.F. application rate.)										
				1.27	*0.91*	*11.05*	*0.00*	*13.23*	*15.09*	*18.93*
RSM 028201302100 Chain link fence, industrial, chain link fence, no barbed wire, galvanized steel, 2" line post, 10' O.C., 1-5/8" top rail, 5' - 0" high, includes excavation	760.00	LF	Landscape Subcontractor	968	692	8,398	0	10,058	11,468	14,383
30 Riverside Oxbow/Gateway	**1.00**	**LS**	**Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)**	**5,182,103**	**9,510,063**	**3,842,638**	**1,774,600**	**20,309,404**	**21,879,470**	**27,441,909**
Riverside Oxbow	**1.00**	**LS**	**Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)**	**4,346,454**	**7,035,270**	**3,436,449**	**1,376,200**	**16,194,373**	**17,669,233**	**22,161,300**
(Note: An estimated total volume of 2,212,000 BCY at Riverside Oxbow will be excavated and hauled to the old wastewater treatement plant (WWTP) site (1,074,000 BCY) and the1st Street Landfill site (1,138,000 BCY). Soil will be dumped, spread, and compacted at each site.)										
Mobilization and Demobilization	**1.00**	**LS**	**Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)**	**4,255**	**7,758**	**0**	**0**	**12,012**	**13,697**	**17,179**
				141.82	*263.18*	*0.00*	*0.00*	*404.99*	*461.78*	*579.18*

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
USR MOBIL-01 Moblization and Demobilization of Heavy Equipment	26.00	EA	Hauling Subcontractor	3,687	6,843	0	0	10,530	12,006	15,059
				141.82	*228.79*	*0.00*	*0.00*	*370.60*	*422.57*	*530.00*
USR MOBIL-02 Mobilization and Demobilization of Medium Equipment	4.00	EA	Hauling Subcontractor	567	915	0	0	1,482	1,690	2,120
Site Preparation	**1.00**	**LS**	**Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)**	**406,296**	**1,062,424**	**19,650**	**0**	**1,488,370**	**1,524,438**	**1,911,998**
				2.77	*5.86*	*0.00*	*0.00*	*8.63*	*9.84*	*12.35*
USR DEMO-14 Demolition, handling, and disposal of 18" diameter vitrified clay pipe	400.00	LF	Demolition Subcontractor	1,109	2,344	0	0	3,453	3,938	4,939
(Note: Based on 022203810100, 023154904200, 022203300100. Assumes 0.027 cubic yards per linear foot of vitrified clay pipe. Assumes 0.065 ton per cubic yard.)										
				5,000.00	*2,500.00*	*5,000.00*	*0.00*	*12,500.00*	*14,252.63*	*17,876.08*
USR DEMO-19 Cut and plug pipe	2.00	EA	Utility Subcontractor	10,000	5,000	10,000	0	25,000	28,505	35,752
(Note: Per Estimator. Cost based on previous work of similar scope.)										
				14.39	*30.44*	*0.00*	*0.00*	*44.83*	*51.11*	*64.11*
USR DEMO-21 Demolition, handling, and disposal of 42" and greater diameter pipe	200.00	LF	Demolition Subcontractor	2,878	6,088	0	0	8,965	10,222	12,821
(Note: Based on USR-DEMO-18, 023154904200, 022203300100. Assumes 0.505 cubic yards of debris per linear foot of pipe. Assumes 2 tons per cubic yard.)										
				0.15	*1.13*	*0.00*	*0.00*	*1.28*	*1.28*	*1.60*
USR STPREP-VS11 Scraper w/Operator, strip soil - Riverside Oxbow	190,740.00	LCY	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	28,252	215,221	0	0	243,473	243,473	305,371
				0.10	*0.26*	*0.00*	*0.00*	*0.36*	*0.36*	*0.45*
USR STPREP-VS05 Dozer w/Operator, clear, grub and stack - Riverside Oxbow	190,740.00	LCY	Valley Storage General Contractor||Note||(Note: Rockwood Park, University	18,663	50,421	0	0	69,084	69,084	86,647

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
			Drive, and Rockwood Ecosystem)							
				1.32	*3.42*	*0.00*	*0.00*	*4.74*	*4.74*	*5.95*
USR SITEPREP-01 Screening and Stockpiling	190,740.00	LCY	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	251,950	653,033	0	0	904,983	904,983	1,135,058
(Note: Screening of stripped soil. Assumes wheel loader w/operator, screening plant, and laborer.)										
				0.95	*1.36*	*0.00*	*0.00*	*2.30*	*2.63*	*3.30*
USR HWYHAUL-12 Highway Haul, 17 CY End Dump, Removal of Screened Material	95,370.00	LCY	Hauling Subcontractor	90,273	129,549	0	0	219,822	250,643	314,364
(Note: Assumes 1/2 of screened material will be hauled off-site for disposal at the city landfill. Remaining material will be left on-site and used for site restoration.)										
				0.19	*0.00*	*0.34*	*0.00*	*0.53*	*0.53*	*0.67*
USR 023707001100 Erosion control, silt fence, polypropylene, adverse conditions, 3' high	10,000.00	LF	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	1,919	0	3,400	0	5,319	5,319	6,672
				0.32	*0.22*	*2.25*	*0.00*	*2.79*	*2.79*	*3.50*
USR 023707001250 Erosion control, hay bales, staked	200.00	LF	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	64	44	450	0	558	558	699
				0.72	*0.44*	*2.00*	*0.00*	*3.16*	*3.16*	*3.96*
USR EROSION-01 Straw Wattles	400.00	LF	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	288	176	800	0	1,264	1,264	1,585

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
(Note: Cost per Estimator.)										
				18.02	*10.97*	*100.00*	*0.00*	*128.99*	*128.99*	*161.79*
USR EROSION-02 Tree Protection	50.00	EA	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	901	549	5,000	0	6,450	6,450	8,089
(Note: Assume safety fence secured to t-posts around tree outside of its drip line.)										
				1.24	*1.95*	*0.00*	*0.43*	*3.62*	*3.99*	*5.01*
Excavation and Hauling	**2,212,000.00**	**BCY**	**Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)**	**2,752,567**	**4,318,571**	**0**	**946,200**	**8,017,338**	**8,827,684**	**11,071,955**
				0.07	*0.17*	*0.00*	*0.00*	*0.24*	*0.24*	*0.30*
USR EXCAV-06 Hyd Excavator, 3 CY, Riverside Oxbow A	1,364,000.00	BCY	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	91,085	230,645	0	0	321,730	321,730	403,523
				0.71	*1.02*	*0.00*	*0.00*	*1.72*	*1.97*	*2.47*
USR HWYHAUL-05 Highway Haul, 17 CY, Riverside Oxbow A to WWTP	1,288,800.00	LCY	Hauling Subcontractor	912,661	1,309,735	0	0	2,222,396	2,533,998	3,178,219
(Note: Productivity from time study conducted on potential haul routes.)										
				1.06	*1.52*	*0.00*	*0.00*	*2.58*	*2.94*	*3.69*
USR HWYHAUL-06 Highway Haul, 17 CY, Riverside Oxbow A to 1st Street Landfill	348,000.00	LCY	Hauling Subcontractor	368,734	529,160	0	0	897,893	1,023,787	1,284,065
(Note: Productivity from time study conducted on potential haul routes.)										
				0.13	*0.34*	*0.00*	*0.00*	*0.47*	*0.47*	*0.59*
USR EXCAV-07 Hyd Excavator, 3 CY, Riverside Oxbow B	166,000.00	BCY	Valley Storage General Contractor||Note||(Note: Rockwood	22,170	56,139	0	0	78,310	78,310	98,218

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
			Park, University Drive, and Rockwood Ecosystem)							
				0.99	*1.42*	*0.00*	*0.00*	*2.41*	*2.75*	*3.45*
USR HWYHAUL-07 Highway Haul, 17 CY, Riverside Oxbow B to 1st Street Landfill (Note: Productivity from time study conducted on potential haul routes.)	199,200.00	LCY	Hauling Subcontractor	197,095	282,846	0	0	479,941	547,233	686,357
				0.13	*0.34*	*0.00*	*0.00*	*0.47*	*0.47*	*0.59*
USR EXCAV-08 Hyd Excavator, 3 CY, Riverside Oxbow C	210,000.00	BCY	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	28,045	71,015	0	0	99,059	99,059	124,243
				1.35	*1.94*	*0.00*	*0.00*	*3.29*	*3.75*	*4.71*
USR HWYHAUL-08 Highway Haul, 17 CY, Riverside Oxbow C to 1st Street Landfill (Note: Productivity from time study conducted on potential haul routes.)	252,000.00	LCY	Hauling Subcontractor	340,761	489,017	0	0	829,777	946,120	1,186,653
				0.20	*0.51*	*0.00*	*0.00*	*0.71*	*0.71*	*0.89*
USR EXCAV-09 Hyd Excavator, 3 CY, Riverside Oxbow D	51,000.00	BCY	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	10,217	25,871	0	0	36,088	36,088	45,263
				1.06	*1.52*	*0.00*	*0.00*	*2.58*	*2.94*	*3.69*
USR HWYHAUL-09 Highway Haul, 17 CY, Riverside Oxbow D to 1st Street Landfill (Note: Productivity from time study conducted on potential haul routes.)	61,200.00	LCY	Hauling Subcontractor	64,846	93,059	0	0	157,905	180,045	225,818
				0.09	*0.23*	*0.00*	*0.00*	*0.31*	*0.31*	*0.39*
USR EXCAV-10 Hyd Excavator, 3 CY, Riverside Oxbow E	130,000.00	BCY	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood	11,575	29,310	0	0	40,885	40,885	51,279

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
			Ecosystem)							
				1.06	*1.52*	*0.00*	*0.00*	*2.58*	*2.94*	*3.69*
USR HWYHAUL-10 Highway Haul, 17 CY, Riverside Oxbow E to 1st Street Landfill	156,000.00	LCY	Hauling Subcontractor	165,294	237,210	0	0	402,504	458,939	575,615
(Note: Productivity from time study conducted on potential haul routes.)										
				0.13	*0.34*	*0.00*	*0.00*	*0.47*	*0.47*	*0.59*
USR EXCAV-11 Hyd Excavator, 3 CY, Riverside Oxbow F	291,000.00	BCY	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	38,865	98,413	0	0	137,278	137,278	172,178
				0.93	*1.33*	*0.00*	*0.00*	*2.26*	*2.58*	*3.23*
USR HWYHAUL-11 Highway Haul, 17 CY, Riverside Oxbow F to 1st Street Landfill	349,200.00	LCY	Hauling Subcontractor	324,057	465,045	0	0	789,102	899,742	1,128,484
(Note: Productivity from time study conducted on potential haul routes.)										
				0.04	*0.15*	*0.00*	*0.00*	*0.19*	*0.19*	*0.24*
USR DOZEXSP-05 Dozer w/Operator - Riverside Oxbow	2,212,000.00	BCY	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	86,949	329,734	0	0	416,683	416,683	522,616
(Note: Assumes that dozer will be used during excavation activities for general grading and other earthwork activities. Productivity based on maximum number of days over which excavation will occur and the volume excavated.)										
				0.00	*0.00*	*0.00*	*49,800.00*	*49,800.00*	*49,800.00*	*62,460.70*
USR 03-03 Traffic Control	19.00	MO	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	0	0	0	946,200	946,200	946,200	1,186,753
(Note: Per Estimator)										
				0.04	*0.03*	*0.00*	*0.00*	*0.07*	*0.07*	*0.09*
USR MAINT-01 Street sweeping	2,212,000.00	CY	Valley Storage General Contractor||Note||(N	90,215	71,374	0	0	161,588	161,588	202,669

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
			ote: Rockwood Park, University Drive, and Rockwood Ecosystem)							
(Note: Based on crew USR-MAINT-01.)										
				0.16	*0.44*	*0.00*	*0.00*	*0.60*	*0.60*	*0.75*
Fill Placement and Compaction	**2,212,000.00**	**BCY**	**Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)**	**358,773**	**970,241**	**0**	**0**	**1,329,013**	**1,329,013**	**1,666,889**
				0.06	*0.23*	*0.00*	*0.00*	*0.29*	*0.29*	*0.36*
USR SPRDFL-06 Backfill, 6" lifts, dozer - Riverside Oxbow - Fill at WWTP	1,288,800.00	LCY	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	77,744	294,824	0	0	372,568	372,568	467,286
				0.08	*0.14*	*0.00*	*0.00*	*0.23*	*0.23*	*0.29*
USR COMP-06 Compaction, riding vibrating roller, pad foot, single drum, 84" wide, 6" lifts, 5 passes - Riverside Oxbow - Fill at WWTP	1,159,920.00	ECY	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	96,452	167,316	0	0	263,768	263,768	330,827
				0.06	*0.24*	*0.00*	*0.00*	*0.30*	*0.30*	*0.38*
USR SPRDFL-07 Backfill, 6" lifts, dozer - Riverside Oxbow - Fill at 1st Street Landfill	1,365,600.00	LCY	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	82,376	332,032	0	0	414,408	414,408	519,764
				0.08	*0.14*	*0.00*	*0.00*	*0.23*	*0.23*	*0.28*
USR COMP-07 Compaction,	1,229,040.00	ECY	Valley Storage	102,200	176,069	0	0	278,269	278,269	349,013

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
riding vibrating roller, pad foot, single drum, 84" wide, 6" lifts, 5 passes - Riverside Oxbow - Fill at 1st Street Landfill			General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)							
Site Restoration	**1.00**	**LS**	**Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)**	**163,275**	**163,673**	**705,637**	**0**	**1,032,584**	**1,054,331**	**1,322,375**
				1.36	*1.06*	*0.00*	*0.00*	*2.42*	*2.42*	*3.03*
USR SPRDFL-12 Spread soil from on-site stockpile to rough finish grade, wheel loader, 1-1/2 CY	85,833.00	ECY	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	116,489	90,905	0	0	207,395	207,395	260,121
				1.21	*2.67*	*21.50*	*0.00*	*25.38*	*25.38*	*31.83*
USR STREST-02 Screened loam, spread with 200 H.P. dozer, includes load at pit and haul, 5 miles round trip, excludes compaction	26,400.00	LCY	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	31,934	70,550	567,600	0	670,084	670,084	840,440
				23.99	*3.58*	*223.00*	*0.00*	*250.57*	*285.71*	*358.34*
RSM 029204000020 Sodding, bluegrass sod, on level ground, 1" deep, 8 M.S.F.	619.00	MSF	Landscape Subcontractor	14,851	2,217	138,037	0	155,105	176,853	221,814
Pavement, Sidewalks, Curbs, and Gutter	**1.00**	**LS**	**Transportation Subcontractor**	**661,289**	**512,605**	**2,711,162**	**430,000**	**4,315,056**	**4,920,070**	**6,170,904**
USR 03-04 Temporary Bridge at First Avenue (Note: Per Estimator)	1.00	LS	Transportation Subcontractor	0	0	0	430,000	430,000	490,290	614,937
				1.11	*0.77*	*6.26*	*0.00*	*8.15*	*9.29*	*11.65*
USR CONC-02 Remove and	316,800.00	SF	Transportation	352,254	245,012	1,984,423	0	2,581,689	2,943,667	3,692,039

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
replace road - 1st Street			Subcontractor							
(Note: Based on 022202505800, 023154904200, 022203300100, 027703000300, 027703000240, 027603000710, 027503000745, 027503000400, 027503003200, 027202000080. Assumes 0.0188 cubic yards of debris per square foot of concrete. Assumes 2 tons per cubic yard for debris. Assume 12' wide unreinforced concrete road with 4" stone base, curbs both sides, and pavement marking lines.)										
				1.34	*1.16*	*3.14*	*0.00*	*5.64*	*6.43*	*8.06*
USR CONC-03 Road rebuilding (patching) - Beach Street	231,200.00	SF	Transportation Subcontractor	309,035	267,594	726,739	0	1,303,367	1,486,112	1,863,928
(Note: Based on 022203600400, 022203600420, 022202505500, 023154904200, 022203300100, 027503001000, 027503000700, 027202000080, 027503000020. Assumes 0.0188 cubic yards of debris per square foot of concrete. Assumes 2 tons per cubic yard for debris. Assumes an aggregate base course will be needed.)										
Gateway	**1.00**	**LS**	**Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)**	**835,650**	**2,474,793**	**406,189**	**398,400**	**4,115,031**	**4,210,237**	**5,280,610**
(Note: An estimated total volume of 861,000 BCY at Riverside Gateway will be excavated and hauled to the Beach Street Fill site (316,000 BCY), the old wastewater treatement plant (WWTP) site (441,000 BCY) and the hydraulic embankment site (104,000 BCY). Soil will be dumped, spread, and compacted at each site.)										
Mobilization and Demobilization	**1.00**	**LS**	**Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)**	**7,091**	**13,090**	**0**	**0**	**20,181**	**23,010**	**28,860**
				141.82	*263.18*	*0.00*	*0.00*	*404.99*	*461.78*	*579.18*
USR MOBIL-01 Moblization and Demobilization of Heavy Equipment	48.00	EA	Hauling Subcontractor	6,807	12,632	0	0	19,440	22,165	27,800
				141.82	*228.79*	*0.00*	*0.00*	*370.60*	*422.57*	*530.00*
USR MOBIL-02 Mobilization and Demobilization of Medium Equipment	2.00	EA	Hauling Subcontractor	284	458	0	0	741	845	1,060
Site Preparation	**1.00**	**LS**	**Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)**	**276,564**	**733,360**	**4,650**	**0**	**1,014,574**	**1,037,187**	**1,300,872**
				1.24	*1.50*	*0.00*	*0.00*	*2.74*	*3.12*	*3.92*

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
USR DEMO-08 Demolition, handling, and disposal of bituminous driveays	3,110.00	SY	Demolition Subcontractor	3,855	4,660	0	0	8,514	9,708	12,176
(Note: Based on 022202505100, 023154904200, 023154904200. Assumes 0.111 cubic yards of debris per square yard. Assumes 1.5 tons per cubic yard.)										
				0.15	*1.13*	*0.00*	*0.00*	*1.28*	*1.28*	*1.60*
USR STPREP-VS12 Scraper w/Operator, strip soil - Riverside Gateway	132,558.00	LCY	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	19,634	149,571	0	0	169,205	169,205	212,223
				0.10	*0.26*	*0.00*	*0.00*	*0.36*	*0.36*	*0.45*
USR STPREP-VS06 Dozer w/Operator, clear, grub and stack - Riverside Gateway	132,558.00	LCY	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	12,970	35,041	0	0	48,011	48,011	60,217
				1.32	*3.42*	*0.00*	*0.00*	*4.74*	*4.74*	*5.95*
USR SITEPREP-01 Screening and Stockpiling	132,558.00	LCY	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	175,097	453,836	0	0	628,933	628,933	788,827
(Note: Screening of stripped soil. Assumes wheel loader w/operator, screening plant, and laborer.)										
				0.95	*1.36*	*0.00*	*0.00*	*2.30*	*2.63*	*3.30*
USR HWYHAUL-12 Highway Haul, 17 CY End Dump, Removal of Screened Material	66,279.00	LCY	Hauling Subcontractor	62,737	90,032	0	0	152,769	174,189	218,473
(Note: Assumes 1/2 of screened material will be hauled off-site for disposal at the city landfill. Remaining material will be left on-site and used for site restoration.)										
				0.19	*0.00*	*0.34*	*0.00*	*0.53*	*0.53*	*0.67*
USR 023707001100 Erosion control, silt fence, polypropylene, adverse conditions, 3' high	10,000.00	LF	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood	1,919	0	3,400	0	5,319	5,319	6,672

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
			Ecosystem)							
				0.32	*0.22*	*2.25*	*0.00*	*2.79*	*2.79*	*3.50*
USR 023707001250 Erosion control, hay bales, staked	200.00	LF	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	64	44	450	0	558	558	699
				0.72	*0.44*	*2.00*	*0.00*	*3.16*	*3.16*	*3.96*
USR EROSION-01 Straw Wattles	400.00	LF	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	288	176	800	0	1,264	1,264	1,585
(Note: Cost per Estimator.)										
				0.35	*1.44*	*0.00*	*0.46*	*2.26*	*2.34*	*2.93*
Excavation and Hauling	**861,200.00**	**BCY**	**Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)**	**305,144**	**1,241,677**	**0**	**398,400**	**1,945,221**	**2,013,116**	**2,524,912**
				0.15	*1.13*	*0.00*	*0.00*	*1.28*	*1.28*	*1.60*
USR SCRAPER-03 Scraper, 34 CY, Gateway G to Beach Street Fill Site	379,200.00	LCY	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	56,166	427,869	0	0	484,035	484,035	607,092
(Note: Productivity based on estimated average haul distance and number of scrapers used.)										
				0.20	*0.51*	*0.00*	*0.00*	*0.71*	*0.71*	*0.89*
USR EXCAV-12 Hyd Excavator, 3 CY, Riverside Gateway G	68,000.00	BCY	Valley Storage General Contractor||Note||(Note: Rockwood	13,623	34,495	0	0	48,118	48,118	60,351

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
			Park, University Drive, and Rockwood Ecosystem)							
				0.21	*0.74*	*0.00*	*0.00*	*0.95*	*1.08*	*1.36*
USR OFFRDHAUL-02 6x6 Articulated Off-Road Truck, 24 CY, Gateway G to WWTP	81,600.00	LCY	Hauling Subcontractor	17,164	60,397	0	0	77,561	88,436	110,919
(Note: Productivity from time study conducted on potential haul routes.)										
				0.09	*0.23*	*0.00*	*0.00*	*0.31*	*0.31*	*0.39*
USR EXCAV-13 Hyd Excavator, 3 CY, Riverside Gateway H	239,000.00	BCY	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	21,280	53,885	0	0	75,165	75,165	94,274
				0.21	*0.74*	*0.00*	*0.00*	*0.95*	*1.08*	*1.36*
USR OFFRDHAUL-03 6x6 Articulated Off-Road Truck, 24 CY, Gateway H to WWTP	286,800.00	LCY	Hauling Subcontractor	60,327	212,277	0	0	272,605	310,827	389,848
(Note: Productivity from time study conducted on potential haul routes.)										
				0.15	*1.13*	*0.00*	*0.00*	*1.28*	*1.28*	*1.60*
USR SCRAPER-04 Scraper, 34 CY, Gateway H to Hydraulic Embankment (Site H)	124,800.00	LCY	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	18,485	140,818	0	0	159,303	159,303	199,802
(Note: Productivity based on estimated average haul distance and number of scrapers used.)										
				0.13	*0.34*	*0.00*	*0.00*	*0.47*	*0.47*	*0.59*
USR EXCAV-14 Hyd Excavator, 3 CY, Riverside Gateway J	134,000.00	BCY	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	17,896	45,317	0	0	63,214	63,214	79,285
				0.18	*0.65*	*0.00*	*0.00*	*0.83*	*0.95*	*1.19*
USR OFFRDHAUL-04 6x6 Articulated Off-Road Truck, 24	160,800.00	LCY	Hauling Subcontractor	29,670	104,401	0	0	134,071	152,869	191,733

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
CY, Gateway J to WWTP										
(Note: Productivity from time study conducted on potential haul routes.)										
				0.04	*0.16*	*0.00*	*0.00*	*0.20*	*0.20*	*0.25*
USR DOZEXSP-01 Dozer w/Operator - Riverside Gateway	861,000.00	BCY	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	35,459	134,468	0	0	169,927	169,927	213,127
(Note: Assumes that dozer will be used during excavation activities for general grading and other earthwork activities. Productivity based on maximum number of days over which excavation will occur and the volume excavated.)										
				0.00	*0.00*	*0.00*	*49,800.00*	*49,800.00*	*49,800.00*	*62,460.70*
USR 03-03 Traffic Control	8.00	MO	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	0	0	0	398,400	398,400	398,400	499,686
(Note: Per Estimator)										
				0.04	*0.03*	*0.00*	*0.00*	*0.07*	*0.07*	*0.09*
USR MAINT-01 Street sweeping	860,000.00	CY	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	35,074	27,749	0	0	62,824	62,824	78,795
(Note: Based on crew USR-MAINT-01.)										
				0.16	*0.43*	*0.00*	*0.00*	*0.59*	*0.59*	*0.75*
Fill Placement and Compaction	**861,200.00**	**BCY**	**Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)**	**139,637**	**372,583**	**0**	**0**	**512,220**	**512,220**	**642,442**
				0.06	*0.23*	*0.00*	*0.00*	*0.29*	*0.29*	*0.36*
USR SPRDFL-08 Backfill, 6"	379,000.00	LCY	Valley Storage	22,862	86,700	0	0	109,562	109,562	137,416

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
lifts, dozer - Riverside Gateway - Fill at Beach Street			General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)							
				0.08	*0.14*	*0.00*	*0.00*	*0.23*	*0.23*	*0.29*
USR COMP-08 Compaction, riding vibrating roller, pad foot, single drum, 84" wide, 6" lifts, 5 passes - Riverside Gateway - Fill at Beach Street	341,280.00	ECY	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	28,379	49,229	0	0	77,608	77,608	97,338
				0.06	*0.23*	*0.00*	*0.00*	*0.29*	*0.29*	*0.37*
USR SPRDFL-09 Backfill, 6" lifts, dozer - Riverside Gateway - Fill at WWTP	529,200.00	LCY	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	31,923	122,146	0	0	154,069	154,069	193,238
				0.08	*0.15*	*0.00*	*0.00*	*0.23*	*0.23*	*0.29*
USR COMP-09 Compaction, riding vibrating roller, pad foot, single drum, 84" wide, 6" lifts, 5 passes - Riverside Gateway - Fill at WWTP	476,280.00	ECY	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	39,605	69,646	0	0	109,251	109,251	137,026
				0.06	*0.23*	*0.00*	*0.00*	*0.29*	*0.29*	*0.36*
USR SPRDFL-10 Backfill, 6" lifts, dozer - Riverside Gateway - Fill Hydraulic Embankment	124,800.00	LCY	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	7,528	28,549	0	0	36,077	36,077	45,249
				0.08	*0.15*	*0.00*	*0.00*	*0.23*	*0.23*	*0.29*
USR COMP-10 Compaction,	112,320.00	ECY	Valley Storage	9,340	16,313	0	0	25,653	25,653	32,175

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
riding vibrating roller, pad foot, single drum, 84" wide, 6" lifts, 5 passes - Riverside Gateway - Fill Hydraulic Embankment			General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)							
Site Restoration	**1.00**	**LS**	**Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)**	**104,238**	**113,359**	**396,884**	**0**	**614,481**	**615,177**	**771,574**
				1.36	*1.06*	*0.00*	*0.00*	*2.42*	*2.42*	*3.03*
USR SPRDFL-12 Spread soil from on-site stockpile to rough finish grade, wheel loader, 1-1/2 CY	59,652.00	ECY	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	80,957	63,177	0	0	144,135	144,135	180,778
				1.21	*2.67*	*21.50*	*0.00*	*25.38*	*25.38*	*31.83*
USR STREST-02 Screened loam, spread with 200 H.P. dozer, includes load at pit and haul, 5 miles round trip, excludes compaction	18,335.00	LCY	Valley Storage General Contractor||Note||(Note: Rockwood Park, University Drive, and Rockwood Ecosystem)	22,179	48,997	394,203	0	465,378	465,378	583,692
				6.80	*7.31*	*16.55*	*0.00*	*30.66*	*34.96*	*43.85*
USR REST-01 Seeding, bermuda grass, chewing with mulch and fertilizer, 3 lb. per M.S.F., tractor spreader	162.00	MSF	Landscape Subcontractor	1,102	1,184	2,681	0	4,967	5,664	7,104
(Note: Material cost based on vendor quote per pound and 3 lb. per M.S.F. application rate.)										
Drainage	**1.00**	**LS**	**Utility Subcontractor**	**2,976**	**724**	**4,655**	**0**	**8,355**	**9,526**	**11,948**
				898.70	*36.49*	*525.00*	*0.00*	*1,460.19*	*1,664.92*	*2,088.19*
RSM 026101000140 Headwall, concrete, cast in place, 30 degree	2.00	EA	Utility Subcontractor	1,797	73	1,050	0	2,920	3,330	4,176

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
skewed wingwall, 36" diameter pipe										
				12.55	*6.39*	*51.50*	*0.00*	*70.43*	*80.31*	*100.73*
RSM 026305302060 Reinforced concrete pipe (RCP), 36" diameter, 8' lengths, class 3, excludes excavation or backfill, gaskets	70.00	LF	Utility Subcontractor	878	447	3,605	0	4,930	5,622	7,051
				0.21	*0.29*	*0.00*	*0.00*	*0.50*	*0.57*	*0.72*
HNC 023156100372 Excavating, trench, medium soil, 6' to 10' deep, 2 C.Y. bucket, gradall, excludes sheeting or dewatering	200.00	BCY	Utility Subcontractor	43	58	0	0	100	114	144
				0.64	*0.55*	*0.00*	*0.00*	*1.18*	*1.35*	*1.69*
HNC 023151101200 Backfill, trench, 60 H.P. dozer, excludes compaction	200.00	LCY	Utility Subcontractor	128	109	0	0	237	270	339
				0.65	*0.18*	*0.00*	*0.00*	*0.83*	*0.95*	*1.19*
HNC 023153107260 Compaction, around structures and trenches, walk behind, vibrating plate	200.00	ECY	Utility Subcontractor	130	37	0	0	167	190	239
06 Fish and Wildlife Facilities	**1.00**	**LS**	**Ham Branch Ecosystem General Contractor**	**531**	**44**	**1,066**	**213,197**	**214,838**	**214,838**	**269,457**

(Note: Fish and wildlife facilities include costs to restore and improve the various habitats at several valley storage sites. The primary locations for ecosystem features are Rockwood Park, Ham Branch and Riverside Oxbow/Gateway. The improvements that are included are seeding (both normal Bermuda grass and grassland/wetlands) and tree plantings. Excavations included with the development of valley storage capacity include the opening of the old Sycamore Creek Oxbow and excavation of the old Riverside Oxbow. In addition, 50,000 cubic yards of earthwork is included at the Rockwood site for the restoration of an existing oxbow. Costs for Ecosystem development including Riparian Forest, Wetlands, and Grasslands were prepared by the Environmental Branch USACE Fort Worth District.)

15 Ham Branch	**1.00**	**LS**	**Ham Branch Ecosystem General Contractor**	**531**	**44**	**1,066**	**213,197**	**214,838**	**214,838**	**269,457**
				0.00	*0.00*	*0.00*	*1,275.00*	*1,275.00*	*1,275.00*	*1,599.14*
USR HB-06-01 Riparian Management	1.40	ACR	Ham Branch Ecosystem General Contractor	0	0	0	1,785	1,785	1,785	2,239
(Note: Per COE Memo: Environmental Mitigation Costs for Ham Branch, 18 November 2005)										
				0.00	*0.00*	*0.00*	*12,500.00*	*12,500.00*	*12,500.00*	*15,677.89*
USR HB-06-02 Riparian Establishment	7.40	ACR	Ham Branch Ecosystem General Contractor	0	0	0	92,500	92,500	92,500	116,016
(Note: Per COE Memo: Environmental Mitigation Costs for Ham Branch, 18 November 2005)										

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
				0.00	*0.00*	*0.00*	*2,254.00*	*2,254.00*	*2,254.00*	*2,827.04*
USR HB-06-03 Clear and Grub	0.80	ACR	Ham Branch Ecosystem General Contractor	0	0	0	1,803	1,803	1,803	2,262
(Note: Per COE Memo: Environmental Mitigation Costs for Ham Branch, 18 November 2005)										
				0.00	*0.00*	*0.00*	*7.24*	*7.24*	*7.24*	*9.08*
USR HB-06-04 Excavation	2,760.00	CY	Ham Branch Ecosystem General Contractor	0	0	0	19,982	19,982	19,982	25,063
(Note: Per COE Memo: Environmental Mitigation Costs for Ham Branch, 18 November 2005)										
				0.00	*0.00*	*0.00*	*1.52*	*1.52*	*1.52*	*1.91*
USR HB-06-05 Backfill	362.00	CY	Ham Branch Ecosystem General Contractor	0	0	0	550	550	550	690
(Note: Per COE Memo: Environmental Mitigation Costs for Ham Branch, 18 November 2005)										
USR HB-06-06 Care of Water	1.00	LS	Ham Branch Ecosystem General Contractor	0	0	0	6,000	6,000	6,000	7,525
(Note: Per COE Memo: Environmental Mitigation Costs for Ham Branch, 18 November 2005)										
				0.00	*0.00*	*0.00*	*2,156.00*	*2,156.00*	*2,156.00*	*2,704.12*
USR HB-06-07 Turfing	0.40	ACR	Ham Branch Ecosystem General Contractor	0	0	0	862	862	862	1,082
(Note: Per COE Memo: Environmental Mitigation Costs for Ham Branch, 18 November 2005)										
				0.00	*0.00*	*0.00*	*1.32*	*1.32*	*1.32*	*1.66*
USR HB-06-08 Offsite Disposal	3,208.00	CY	Ham Branch Ecosystem General Contractor	0	0	0	4,235	4,235	4,235	5,311
(Note: Per COE Memo: Environmental Mitigation Costs for Ham Branch, 18 November 2005)										
				0.00	*0.00*	*0.00*	*11.11*	*11.11*	*11.11*	*13.93*
USR HB-06-09 Toe Protection	350.00	LF	Ham Branch Ecosystem General Contractor	0	0	0	3,889	3,889	3,889	4,877
(Note: Per COE Memo: Environmental Mitigation Costs for Ham Branch, 18 November 2005)										
				0.00	*0.00*	*0.00*	*350.00*	*350.00*	*350.00*	*438.98*
USR HB-06-10 Rock Dams	8.00	EA	Ham Branch Ecosystem General Contractor	0	0	0	2,800	2,800	2,800	3,512
(Note: Per COE Memo: Environmental Mitigation Costs for Ham Branch, 18 November 2005)										
				0.00	*0.00*	*0.00*	*11.15*	*11.15*	*11.15*	*13.98*
USR HB-06-11 Substrate Modification	900.00	LF	Ham Branch Ecosystem General Contractor	0	0	0	10,035	10,035	10,035	12,586
(Note: Per COE Memo: Environmental Mitigation Costs for Ham Branch, 18 November 2005)										

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
				0.00	*0.00*	*0.00*	*3.00*	*3.00*	*3.00*	*3.76*
USR HB-06-12 Excavation for Wetland	2,792.00	CY	Ham Branch Ecosystem General Contractor	0	0	0	8,376	8,376	8,376	10,505
(Note: Per COE Memo: Environmental Mitigation Costs for Ham Branch, 18 November 2005)										
				0.00	*0.00*	*0.00*	*2,500.00*	*2,500.00*	*2,500.00*	*3,135.58*
USR HB-06-13 Gate	1.00	EA	Ham Branch Ecosystem General Contractor	0	0	0	2,500	2,500	2,500	3,136
(Note: Per COE Memo: Environmental Mitigation Costs for Ham Branch, 18 November 2005)										
				0.00	*0.00*	*0.00*	*230.00*	*230.00*	*230.00*	*288.47*
USR HB-06-14 Reinforced Concrete Wall	56.00	CY	Ham Branch Ecosystem General Contractor	0	0	0	12,880	12,880	12,880	16,154
(Note: Per COE Memo: Environmental Mitigation Costs for Ham Branch, 18 November 2005)										
				0.00	*0.00*	*0.00*	*5,000.00*	*5,000.00*	*5,000.00*	*6,271.16*
USR HB-06-15 Reinforced Gate	1.00	EA	Ham Branch Ecosystem General Contractor	0	0	0	5,000	5,000	5,000	6,271
(Note: Per COE Memo: Environmental Mitigation Costs for Ham Branch, 18 November 2005)										
USR HB-06-16 Miscellaneous Materials	1.00	LS	Ham Branch Ecosystem General Contractor	0	0	0	40,000	40,000	40,000	50,169
(Note: Allowance per Estimator for raising manholes as needed, sealing utility lines underneath levee, and seable frames and covers for 5 manholes.)										
				0.19	*0.00*	*0.34*	*0.00*	*0.53*	*0.53*	*0.67*
USR 023707001100 Erosion control, silt fence, polypropylene, adverse conditions, 3' high	2,400.00	LF	Ham Branch Ecosystem General Contractor	461	0	816	0	1,277	1,277	1,601
				0.32	*0.22*	*2.25*	*0.00*	*2.79*	*2.79*	*3.50*
USR 023707001250 Erosion control, hay bales, staked	40.00	LF	Ham Branch Ecosystem General Contractor	13	9	90	0	112	112	140
				0.72	*0.44*	*2.00*	*0.00*	*3.16*	*3.16*	*3.96*
USR EROSION-01 Straw Wattles	80.00	LF	Ham Branch Ecosystem General Contractor	58	35	160	0	253	253	317
(Note: Cost per Estimator.)										
11 Levees and Floodwalls	**1.00**	**LS**	**Bypass Channel and Levees General Contractor**	**7,974,195**	**5,158,184**	**13,675,339**	**0**	**26,807,718**	**29,861,028**	**37,452,628**

(Note: Bypass Channel construction was been broken into two separate areas; North and South. The channel will consist of an excavated center channel with a new earthen levee constructed on the west side of the channel and multi-level reinforced concrete floodwalls on the east side. Both sides of the channel will have recreational paths for pedestrian access. All excess excavation material will be stockpiled in the future development area for use during construction of the flood control gates, backfill behind the retaining walls and White Settlement roadway embankment. Two pedestrian crossings will be

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
constructed across the new channel and the West Fork Trinity River (just prior to the intersection with the new channel). Both pedestrian crossings will be designed to act as water breaks during a flood event.)										
Bypass Channel - North	**1.00**	**LS**	**Bypass Channel and Levees General Contractor**	**3,643,577**	**2,501,552**	**5,983,308**	**0**	**12,128,437**	**13,507,391**	**16,941,389**
Mobilization and Demobilization	**1.00**	**LS**	**Bypass Channel and Levees General Contractor**	**6,240**	**11,373**	**0**	**0**	**17,613**	**20,083**	**25,189**
USR MOBIL-01 Moblization and Demobilization of Heavy Equipment	38.00	EA	Hauling Subcontractor	*141.82* 5,389	*263.18* 10,001	*0.00* 0	*0.00* 0	*404.99* 15,390	*461.78* 17,548	*579.18* 22,009
USR MOBIL-02 Mobilization and Demobilization of Medium Equipment	6.00	EA	Hauling Subcontractor	*141.82* 851	*228.79* 1,373	*0.00* 0	*0.00* 0	*370.60* 2,224	*422.57* 2,535	*530.00* 3,180
Site Preparation	**1.00**	**LS**	**Bypass Channel and Levees General Contractor**	**227**	**22**	**465**	**0**	**714**	**714**	**896**
USR 023707001100 Erosion control, silt fence, polypropylene, adverse conditions, 3' high	1,000.00	LF	Bypass Channel and Levees General Contractor	*0.19* 192	*0.00* 0	*0.34* 340	*0.00* 0	*0.53* 532	*0.53* 532	*0.67* 667
USR 023707001250 Erosion control, hay bales, staked	20.00	LF	Bypass Channel and Levees General Contractor	*0.32* 6	*0.22* 4	*2.25* 45	*0.00* 0	*2.79* 56	*2.79* 56	*3.50* 70
USR EROSION-01 Straw Wattles	40.00	LF	Bypass Channel and Levees General Contractor	*0.72* 29	*0.44* 18	*2.00* 80	*0.00* 0	*3.16* 126	*3.16* 126	*3.96* 159
(Note: Cost per Estimator.)										
Excavation, Hauling, and Placement	**1.00**	**LS**	**Bypass Channel and Levees General Contractor**	**1,000,026**	**2,171,978**	**1,767,509**	**0**	**4,939,513**	**5,310,609**	**6,660,730**
(Note: The valley fill is the portion of levees and berms around the Valley Storage sites. The levee fill is located adjacent to the Bypass Channels to adjust the channel walls for flood conditions. The retaining wall fill is estimated in the earthwork portion. The gate fill is located at one of the three gates. The remainder of fill is assumed to be used as fill for road projects. Fill volumes were determined in bank cubic yard (BCY), loose cubic yard (LCY), and embankment cubic yard (ECY) units of measure. A bulking factor of 1.2 was assumed for converting BCY to LCY. A compaction factor of 0.9 was assumed for converting LCY to ECY.)										

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
				0.13	*0.34*	*0.00*	*0.00*	*0.47*	*0.47*	*0.59*
USR EXCAV-BY01 Hyd Excavator, 3 CY - Bypass Channel (North)	550,912.00	BCY	Bypass Channel and Levees General Contractor	73,577	186,701	0	0	260,278	260,278	326,449
(Note: Excavated material from north bypass channel.)										
				0.24	*0.84*	*0.00*	*0.00*	*1.08*	*1.23*	*1.54*
USR OFFRDHAUL-BY01 6x6 Articulated Off-Road Truck, 24 CY, North Bypass Channel	661,094.00	LCY	Hauling Subcontractor	158,021	556,039	0	0	714,060	814,178	1,021,168
(Note: Productivity based on estimated average haul distance, number of excavators and dump trucks used. Excavated material is hauled to five different locations within the site area: Valley Fill (75,535 BCY), Levee Fill (176,249 BCY), Retaining Wall Fill (135,576 BCY), TRWD Gate Fill (146,336 BCY), and Road Fill (17,216 BCY) where it is spread and compacted.)										
				0.18	*0.80*	*0.00*	*0.00*	*0.98*	*0.98*	*1.23*
USR DOZEXSP-07 Ripping sedimentary rock, dozer with single shank ripper, 300 HP	130,000.00	BCY	Bypass Channel and Levees General Contractor	23,524	104,266	0	0	127,790	127,790	160,278
				0.13	*0.34*	*0.00*	*0.00*	*0.47*	*0.47*	*0.59*
USR EXCAV-16 Hyd Excavator, 3 CY, Bypass Channel - North - Rock	130,000.00	BCY	Bypass Channel and Levees General Contractor	17,362	43,965	0	0	61,327	61,327	76,918
				1.15	*1.64*	*0.00*	*0.00*	*2.79*	*3.18*	*3.99*
USR HWYHAUL-13 Highway Haul, 17 CY End Dump, Removal of Rock - North Bypass Channel	156,000.00	LCY	Hauling Subcontractor	178,625	256,339	0	0	434,964	495,950	622,036
				0.07	*0.27*	*0.00*	*0.00*	*0.34*	*0.34*	*0.42*
USR SPRDFL-BY02 Backfill, 6" lifts, dozer - Bypass Channel (North) - Valley Fill	90,642.00	LCY	Bypass Channel and Levees General Contractor	6,318	24,273	0	0	30,591	30,591	38,368
				0.08	*0.15*	*0.00*	*0.00*	*0.23*	*0.23*	*0.29*
USR COMP-BY02 Compaction, riding vibrating roller, pad foot, single drum, 84" wide, 6" lifts, 5 passes - Bypass Channel (North) - Valley Fill	81,578.00	ECY	Bypass Channel and Levees General Contractor	6,784	11,848	0	0	18,632	18,632	23,369
				0.07	*0.27*	*0.00*	*0.00*	*0.34*	*0.34*	*0.42*
USR SPRDFL-BY03 Backfill, 6" lifts, dozer - Bypass Channel (North) - Levee Fill	211,499.00	LCY	Bypass Channel and Levees General Contractor	14,743	56,611	0	0	71,354	71,354	89,494
				0.08	*0.15*	*0.00*	*0.00*	*0.23*	*0.23*	*0.29*
USR COMP-BY03 Compaction, riding vibrating roller, pad foot, single drum, 84" wide, 6" lifts, 5 passes - Bypass Channel (North) - Levee Fill	190,349.00	ECY	Bypass Channel and Levees General Contractor	15,828	27,646	0	0	43,474	43,474	54,527

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
				0.07	*0.27*	*0.00*	*0.00*	*0.34*	*0.34*	*0.42*
USR SPRDFL-BY04 Backfill, 6" lifts, dozer - Bypass Channel (North) - Retaining Wall Fill	162,691.00	LCY	Bypass Channel and Levees General Contractor	11,341	43,528	0	0	54,868	54,868	68,817
				0.08	*0.14*	*0.00*	*0.00*	*0.23*	*0.23*	*0.29*
USR COMP-BY04 Compaction, riding vibrating roller, pad foot, single drum, 84" wide, 6" lifts, 5 passes - Bypass Channel (North) - Retaining Wall Fill	146,422.00	ECY	Bypass Channel and Levees General Contractor	12,176	21,197	0	0	33,373	33,373	41,858
				0.07	*0.27*	*0.00*	*0.00*	*0.34*	*0.34*	*0.42*
USR SPRDFL-BY05 Backfill, 6" lifts, dozer - Bypass Channel (North) - TRWD Gate Fill	175,603.00	LCY	Bypass Channel and Levees General Contractor	12,241	46,941	0	0	59,181	59,181	74,227
				0.08	*0.15*	*0.00*	*0.00*	*0.23*	*0.23*	*0.29*
USR COMP-BY05 Compaction, riding vibrating roller, pad foot, single drum, 84" wide, 6" lifts, 5 passes - Bypass Channel (North) - TRWD Gate Fill	158,043.00	ECY	Bypass Channel and Levees General Contractor	13,142	22,923	0	0	36,065	36,065	45,233
				0.07	*0.26*	*0.00*	*0.00*	*0.33*	*0.33*	*0.42*
USR SPRDFL-BY06 Backfill, 6" lifts, dozer - Bypass Channel (North) - Road Fill	20,659.00	LCY	Bypass Channel and Levees General Contractor	1,440	5,461	0	0	6,901	6,901	8,656
				0.08	*0.14*	*0.00*	*0.00*	*0.23*	*0.23*	*0.29*
USR COMP-BY06 Compaction, riding vibrating roller, pad foot, single drum, 84" wide, 6" lifts, 5 passes - Bypass Channel (North) - Road Fill	18,593.00	ECY	Bypass Channel and Levees General Contractor	1,546	2,692	0	0	4,238	4,238	5,315
				2.64	*2.60*	*9.35*	*0.00*	*14.59*	*14.59*	*18.30*
USR CFFRDAM-01 Coffer Dam, Sheet Piling, Steel, 38 psf, 25' Excavation, Drive, Extract, and Salvage - 400' long by 30' tall, removed at completion	12,000.00	SF	Bypass Channel and Levees General Contractor	31,690	31,167	112,200	0	175,056	175,056	219,561
(Note: Cost and productivity based on RS MEANS 2008 Costworks Item 31 41 1610 1900.)										
				49.50	*352.16*	*40.00*	*0.00*	*441.66*	*441.66*	*553.94*
USR CARE-01 Care of water - pumps	248.00	DAY	Bypass Channel and Levees General Contractor	12,277	87,334	9,920	0	109,531	109,531	137,377
(Note: 4 pumps operating for 62 days each. Assumes 2 pumps discharge to 1 common settling basin and outfall. Skid mounted 6" centrifugal pump, 100' of hose (5 sections). Crew and equipment to check on pumps daily. Allowance per estimator to cover miscellaneous materials.)										
				49.55	*352.16*	*20.00*	*0.00*	*421.70*	*421.70*	*528.91*

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
USR CARE-02 Care of water - settling basin	124.00	DAY	Bypass Channel and Levees General Contractor	6,144	43,667	2,480	0	52,291	52,291	65,585
(Note: 2 settling basins operating for 62 days each. Skid mounted 6" centrifugal pump, 100' of hose (5 sections). Crew and equipment to check on settling basin daily. Allowance per estimator to cover miscellaneous materials.)										
				63.66	*15.51*	*50.00*	*0.00*	*129.17*	*129.17*	*162.01*
USR CARE-03 Care of water - discharge piping	124.00	DAY	Bypass Channel and Levees General Contractor	7,894	1,923	6,200	0	16,017	16,017	20,089
(Note: 2 discharge piping systems operating for 62 days each. Crew and equipment to check on discharge piping daily. Allowance per estimator to cover miscellaneous materials.)										
				57.34	*15.51*	*20.00*	*0.00*	*92.85*	*92.85*	*116.45*
USR CARE-04 Care of water - outfall	124.00	DAY	Bypass Channel and Levees General Contractor	7,110	1,923	2,480	0	11,513	11,513	14,440
(Note: 2 outfalls operating for 62 days each. Crew and equipment to check on outfall daily. Allowance per estimator to cover miscellaneous materials.)										
				3.05	*4.37*	*8.50*	*0.00*	*15.92*	*18.15*	*22.76*
USR HWYHAUL-17 Highway Haul, 17 CY End Dump, Import Material - structural fill - Bypass Channel (North)	82,636.00	LCY	Hauling Subcontractor	251,733	361,256	702,406	0	1,315,395	1,499,826	1,881,129
(Note: Material cost per Estimator. Cost based on previous work of similar scope. Assumes 60 minute round trip haul time.)										
				0.18	*0.26*	*0.00*	*0.00*	*0.44*	*0.44*	*0.55*
USR MATPLC-03 Material Placement - structual fill - Bypass Channel (North)	82,636.00	LCY	Bypass Channel and Levees General Contractor	14,724	21,462	0	0	36,186	36,186	45,386
				0.10	*0.17*	*0.00*	*0.00*	*0.27*	*0.27*	*0.34*
USR COMP-BY13 Compaction, riding vibrating roller, pad foot, single drum, 84" wide, 6" lifts, 5 passes - structual fill - Bypass Channel (North)	74,373.00	ECY	Bypass Channel and Levees General Contractor	7,421	12,926	0	0	20,347	20,347	25,520
				2.12	*3.04*	*33.00*	*0.00*	*38.16*	*43.51*	*54.57*
USR HWYHAUL-15 Highway Haul, 17 CY End Dump, Import Material - gravel drainage behind retaining walls - Bypass Channel (North)	4,777.00	LCY	Hauling Subcontractor	10,123	14,528	157,641	0	182,292	207,851	260,693
(Note: Material cost for RS MEANS CostWorks 2008 item number 31 05 1610 0320. Assumes 60 minute round trip haul time.)										
				0.18	*0.26*	*0.00*	*0.00*	*0.44*	*0.44*	*0.55*
USR MATPLC-01 Material Placement - gravel drainage behind retaining walls - Bypass Channel (North)	4,777.00	LCY	Bypass Channel and Levees General Contractor	851	1,241	0	0	2,092	2,092	2,624
				2.58	*5.70*	*21.50*	*0.00*	*29.78*	*29.78*	*37.35*

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
USR STREST-02 Screened loam, spread with 200 H.P. dozer, includes load at pit and haul, 5 miles round trip, excludes compaction	22,596.00	LCY	Bypass Channel and Levees General Contractor	58,297	128,792	485,814	0	672,903	672,903	843,976
RSM STREST-01 For 5 mile haul, add										
				10.48	*12.86*	*67.00*	*0.00*	*90.33*	*90.33*	*113.30*
USR RIPRAP-01 Rip-rap, random, broken stone, 3/8 to 1/4 C.Y. pieces, machine placed for slope protection, grouted	4,304.00	SY	Bypass Channel and Levees General Contractor	45,095	55,331	288,368	0	388,793	388,793	487,637
(Note: Cost and productivity based on RS MEANS 2008 Costworks Item 31 37 1310 0110.)										
Pavement, Sidewalks, Curbs, and Gutter	**1.00**	**LS**	**Concrete Subcontractor**	**78,581**	**0**	**275,246**	**0**	**353,827**	**403,437**	**506,004**
				0.69	*0.00*	*2.27*	*0.00*	*2.96*	*3.37*	*4.23*
USR PVSWCG-01 Sidewalk, concrete, cast-in-place with 6 x 6 - W1.4 x W1.4 mesh, broomed finish, 3000 psi, 5" thick, excludes base	41,163.00	SF	Concrete Subcontractor	28,256	0	93,440	0	121,696	138,759	174,035
(Note: Cost and productivity based on RS MEANS 2008 Costworks Item 32 06 1010 0350.)										
				0.73	*0.00*	*2.65*	*0.00*	*3.38*	*3.86*	*4.84*
USR PVSWCG-02 Sidewalk, concrete, cast-in-place with 6 x 6 - W1.4 x W1.4 mesh, broomed finish, 3000 psi, 6" thick, excludes base	68,606.00	SF	Concrete Subcontractor	50,326	0	181,806	0	232,131	264,679	331,968
(Note: Cost and productivity based on RS MEANS 2008 Costworks Item 32 06 1010 0400.)										
Retaining Walls	**1.00**	**LS**	**Concrete Subcontractor**	**2,521,656**	**297,683**	**3,756,570**	**0**	**6,575,909**	**7,497,917**	**9,404,120**
(Note: Lower retaining wall is approximately 4,028 feet long. The footing is 16’ wide and 1’-6” thick. The wall is 1’-2” thick and 12’ high. Middle retaining wall is approximately 4,028 feet long. The footing is 11’-6” wide and 1’-6” thick. The wall is 1’-2” thick and 11’-6” high. Upper retaining wall is approximately 3,678 feet long. The footing is between 6’-6” and 11’-3” wide and between 1’-6” and 1’-8” thick. The wall is between 1’-2” and 1’-5.5” thick and between 7’-6” and 11’-4” high.)										
				211.97	*25.84*	*325.84*	*0.00*	*563.65*	*642.68*	*806.06*
Lower Wall	**3,678.00**	**LF**	**Concrete Subcontractor**	**779,615**	**95,025**	**1,198,453**	**0**	**2,073,093**	**2,363,762**	**2,964,703**
				1.91	*0.49*	*0.00*	*0.00*	*2.40*	*2.73*	*3.43*
USR BASEPRP-01 Grading for footing	5,440.00	SY	Concrete Subcontractor	10,365	2,679	0	0	13,045	14,874	18,655
				2.30	*1.11*	*0.00*	*0.00*	*3.41*	*3.88*	*4.87*
USR BASEPRP-02 Compaction, around structures and trenches, 4 passes, 6" lift, 1 ton roller	5,440.00	SY	Concrete Subcontractor	12,497	6,034	0	0	18,531	21,129	26,501

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
				1.91	*0.49*	*7.83*	*0.00*	*10.23*	*11.66*	*14.63*
USR BASEPRP-03 Gravel base for retaining wall footing	5,440.00	SY	Concrete Subcontractor	10,365	2,679	42,595	0	55,640	63,441	79,570
(Note: Material cost for RS MEANS CostWorks 2008 item number 31 23 2317 0600.)										
				2.18	*0.00*	*4.91*	*0.00*	*7.09*	*8.09*	*10.15*
USR FORM-01 C.I.P. concrete forms, footing, spread, plywood, 1 use, includes erecting, bracing, stripping and cleaning	11,070.00	SFC	Concrete Subcontractor	24,186	0	54,354	0	78,540	89,552	112,319
(Note: Material cost for RS MEANS CostWorks 2008 item number 03 11 1345 0020.)										
				293.56	*0.00*	*890.00*	*0.00*	*1,183.56*	*1,349.51*	*1,692.59*
USR REIN-01 Reinforcing steel, in place, footings, #8 to #18, A615, grade 60, incl access. Labor	203.00	TON	Concrete Subcontractor	59,593	0	180,670	0	240,263	273,950	343,597
(Note: Material cost per RS Means CostWorks 2008 item number 03211 060 0550. Assumes 175 lbs reinforcing per cubic yard of concrete.)										
				9.21	*8.62*	*105.00*	*0.00*	*122.83*	*140.06*	*175.66*
USR CONC-01 Structural concrete, placing, continuous footing, shallow, pumped, includes vibrating	2,310.00	CY	Concrete Subcontractor	21,283	19,915	242,550	0	283,748	323,532	405,784
				5.14	*0.00*	*1.85*	*0.00*	*6.99*	*7.97*	*10.00*
USR FORM-02 C.I.P. concrete forms, wall, job built, plywood, exterior, 8' to 16' high, 1 use, includes erecting, bracing, stripping and cleaning	83,160.00	SFC	Concrete Subcontractor	427,799	0	153,846	0	581,645	663,197	831,803
(Note: Material cost for RS MEANS CostWorks 2008 item number 03 11 1385 4600.)										
				293.56	*0.00*	*890.00*	*0.00*	*1,183.56*	*1,349.51*	*1,692.59*
USR REIN-01 Reinforcing steel, in place, footings, #8 to #18, A615, grade 60, incl access. Labor	230.00	TON	Concrete Subcontractor	67,519	0	204,700	0	272,219	310,387	389,297
(Note: Material cost per RS Means CostWorks 2008 item number 03211 060 0550. Assumes 175 lbs reinforcing per cubic yard of concrete.)										
				15.36	*14.37*	*105.00*	*0.00*	*134.72*	*153.61*	*192.67*
USR CONC-02 Structural concrete, placing, walls, pumped, includes vibrating	2,620.00	CY	Concrete Subcontractor	40,232	37,646	275,100	0	352,978	402,469	504,789
				0.00	*0.00*	*1.55*	*0.00*	*1.55*	*1.77*	*2.22*
USR RTWLMT-04 Drain Pipe for Retaining Wall, 1" Sch 40 PVC	1,990.00	LF	Concrete Subcontractor	0	0	3,085	0	3,085	3,517	4,411
(Note: Material cost for RS MEANS CostWorks 2008 item number 22 11 1374 1880. Assumes pipe will be installed during during reinforcement and forming work.)										
				0.00	*0.00*	*7.55*	*0.00*	*7.55*	*8.61*	*10.80*

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
USR RTWLMT-07 Drain pipe for retaining wall, 4" Sch 40 PVC	60.00	EA	Concrete Subcontractor	0	0	453	0	453	517	648
(Note: 200' spacing for lower level wall flap gate drains below normal pool elevation. Material cost for RS MEANS CostWorks 2008 item number 22 11 1374 6600. Assumes pipe will be installed during during reinforcement)										
				30.32	*0.00*	*500.00*	*0.00*	*530.32*	*604.67*	*758.40*
USR RTWLMT-06 Flap gates, 4"	19.00	EA	Concrete Subcontractor	576	0	9,500	0	10,076	11,489	14,410
(Note: Drains for lower level wall below normal pool elevation. Material cost from vendor quote.)										
				2.17	*0.00*	*1.98*	*0.00*	*4.15*	*4.73*	*5.93*
USR RTWLMT-05 Soil drainage mat on vertical wall, 0.8" thick	4,620.00	SY	Concrete Subcontractor	10,026	0	9,148	0	19,173	21,861	27,419
(Note: Material cost for RS MEANS CostWorks 2008 item number 33 46 2610 0190.)										
				3.32	*0.00*	*0.27*	*0.00*	*3.59*	*4.10*	*5.14*
USR CEMFIN-01 Retaining wall finishing - break ties and patch voids	4,620.00	SY	Concrete Subcontractor	15,360	0	1,247	0	16,607	18,935	23,749
(Note: Material cost for RS MEANS CostWorks 2008 item number 03 35 2960 0020.)										
				17.28	*5.64*	*4.59*	*0.00*	*27.51*	*31.37*	*39.34*
USR CEMFIN-02 Retaining wall finishing - sand blast, heavy penetration	4,620.00	SY	Concrete Subcontractor	79,815	26,072	21,206	0	127,092	144,912	181,753
(Note: Material cost for RS MEANS CostWorks 2008 item number 03 35 2960 0750.)										
				206.63	*23.23*	*289.41*	*0.00*	*519.27*	*592.08*	*742.60*
Middle Wall	**4,028.00**	**LF**	**Concrete Subcontractor**	**832,305**	**93,575**	**1,165,735**	**0**	**2,091,615**	**2,384,881**	**2,991,192**
				1.91	*0.49*	*0.00*	*0.00*	*2.40*	*2.73*	*3.43*
USR BASEPRP-01 Grading for footing	6,050.00	SY	Concrete Subcontractor	11,527	2,980	0	0	14,507	16,541	20,747
				2.30	*1.11*	*0.00*	*0.00*	*3.41*	*3.88*	*4.87*
USR BASEPRP-02 Compaction, around structures and trenches, 4 passes, 6" lift, 1 ton roller	6,050.00	SY	Concrete Subcontractor	13,899	6,710	0	0	20,609	23,498	29,472
				1.91	*0.49*	*7.83*	*0.00*	*10.23*	*11.66*	*14.63*
USR BASEPRP-03 Gravel base for retaining wall footing	6,050.00	SY	Concrete Subcontractor	11,527	2,980	47,372	0	61,879	70,555	88,492
(Note: Material cost for RS MEANS CostWorks 2008 item number 31 23 2317 0600.)										
				2.18	*0.00*	*4.91*	*0.00*	*7.09*	*8.09*	*10.15*
USR FORM-01 C.I.P. concrete forms, footing, spread, plywood, 1 use, includes erecting, bracing, stripping and cleaning	12,120.00	SFC	Concrete Subcontractor	26,480	0	59,509	0	85,990	98,046	122,972
(Note: Material cost for RS MEANS CostWorks 2008 item number 03 11 1345 0020.)										
				293.56	*0.00*	*890.00*	*0.00*	*1,183.56*	*1,349.51*	*1,692.59*

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
USR REIN-01 Reinforcing steel, in place, footings, #8 to #18, A615, grade 60, incl access.	226.00	TON	Concrete Subcontractor	66,345	0	201,140	0	267,485	304,989	382,526
Labor				*9.21*	*8.62*	*105.00*	*0.00*	*122.83*	*140.06*	*175.66*
(Note: Material cost per RS Means CostWorks 2008 item number 03211 060 0550. Assumes 175 lbs reinforcing per cubic yard of concrete.)										
USR CONC-01 Structural concrete, placing, continuous footing, shallow, pumped, includes vibrating	2,580.00	CY	Concrete Subcontractor	23,770	22,243	270,900	0	316,913	361,348	453,213
				5.14	*0.00*	*1.85*	*0.00*	*6.99*	*7.97*	*10.00*
USR FORM-02 C.I.P. concrete forms, wall, job built, plywood, exterior, 8' to 16' high, 1 use, includes erecting, bracing, stripping and cleaning	92,670.00	SFC	Concrete Subcontractor	476,721	0	171,440	0	648,161	739,039	926,926
(Note: Material cost for RS MEANS CostWorks 2008 item number 03 11 1385 4600.)										
				293.56	*0.00*	*890.00*	*0.00*	*1,183.56*	*1,349.51*	*1,692.59*
USR REIN-01 Reinforcing steel, in place, footings, #8 to #18, A615, grade 60, incl access.	181.00	TON	Concrete Subcontractor	53,134	0	161,090	0	214,224	244,261	306,360
Labor				*15.36*	*14.37*	*105.00*	*0.00*	*134.72*	*153.61*	*192.67*
(Note: Material cost per RS Means CostWorks 2008 item number 03211 060 0550. Assumes 175 lbs reinforcing per cubic yard of concrete.)										
USR CONC-02 Structural concrete, placing, walls, pumped, includes vibrating	2,060.00	CY	Concrete Subcontractor	31,633	29,600	216,300	0	277,532	316,445	396,895
				0.00	*0.00*	*1.55*	*0.00*	*1.55*	*1.77*	*2.22*
USR RTWLMT-04 Drain Pipe for Retaining Wall, 1" Sch 40 PVC	1,780.00	LF	Concrete Subcontractor	0	0	2,759	0	2,759	3,146	3,946
(Note: Material cost for RS MEANS CostWorks 2008 item number 22 11 1374 1880. Assumes pipe will be installed during during reinforcement and forming work.)										
				2.17	*0.00*	*1.98*	*0.00*	*4.15*	*4.73*	*5.93*
USR RTWLMT-05 Soil drainage mat on vertical wall, 0.8" thick	5,150.00	SY	Concrete Subcontractor	11,176	0	10,197	0	21,373	24,369	30,565
(Note: Material cost for RS MEANS CostWorks 2008 item number 33 46 2610 0190.)										
				3.32	*0.00*	*0.27*	*0.00*	*3.59*	*4.10*	*5.14*
USR CEMFIN-01 Retaining wall finishing - break ties and patch voids	5,150.00	SY	Concrete Subcontractor	17,122	0	1,391	0	18,512	21,108	26,474
(Note: Material cost for RS MEANS CostWorks 2008 item number 03 35 2960 0020.)										
				17.28	*5.64*	*4.59*	*0.00*	*27.51*	*31.37*	*39.34*
USR CEMFIN-02 Retaining wall finishing - sand blast, heavy	5,150.00	SY	Concrete Subcontractor	88,971	29,062	23,639	0	141,672	161,536	202,604

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
penetration										
(Note: Material cost for RS MEANS CostWorks 2008 item number 03 35 2960 0750.)										
				225.85	*27.08*	*345.68*	*0.00*	*598.61*	*682.54*	*856.06*
Upper Wall	**4,028.00**	**LF**	**Concrete Subcontractor**	**909,736**	**109,083**	**1,392,381**	**0**	**2,411,200**	**2,749,274**	**3,448,225**
				1.91	*0.49*	*0.00*	*0.00*	*2.40*	*2.73*	*3.43*
USR BASEPRP-01 Grading for footing	8,060.00	SY	Concrete Subcontractor	15,357	3,970	0	0	19,327	22,037	27,639
				2.30	*1.11*	*0.00*	*0.00*	*3.41*	*3.88*	*4.87*
USR BASEPRP-02 Compaction, around structures and trenches, 4 passes, 6" lift, 1 ton roller	8,060.00	SY	Concrete Subcontractor	18,516	8,939	0	0	27,456	31,305	39,264
				1.91	*0.49*	*7.83*	*0.00*	*10.23*	*11.66*	*14.63*
USR BASEPRP-03 Gravel base for retaining wall footing	8,060.00	SY	Concrete Subcontractor	15,357	3,970	63,110	0	82,437	93,995	117,892
(Note: Material cost for RS MEANS CostWorks 2008 item number 31 23 2317 0600.)										
				2.18	*0.00*	*4.91*	*0.00*	*7.09*	*8.09*	*10.15*
USR FORM-01 C.I.P. concrete forms, footing, spread, plywood, 1 use, includes erecting, bracing, stripping and cleaning	12,130.00	SFC	Concrete Subcontractor	26,502	0	59,558	0	86,060	98,127	123,074
(Note: Material cost for RS MEANS CostWorks 2008 item number 03 11 1345 0020.)										
				293.56	*0.00*	*890.00*	*0.00*	*1,183.56*	*1,349.51*	*1,692.59*
USR REIN-01 Reinforcing steel, in place, footings, #8 to #18, A615, grade 60, incl access. Labor	315.00	TON	Concrete Subcontractor	92,472	0	280,350	0	372,822	425,095	533,167
(Note: Material cost per RS Means CostWorks 2008 item number 03211 060 0550. Assumes 175 lbs reinforcing per cubic yard of concrete.)										
				9.21	*8.62*	*105.00*	*0.00*	*122.83*	*140.06*	*175.66*
USR CONC-01 Structural concrete, placing, continuous footing, shallow, pumped, includes vibrating	3,590.00	CY	Concrete Subcontractor	33,076	30,950	376,950	0	440,976	502,806	630,634
				5.14	*0.00*	*1.85*	*0.00*	*6.99*	*7.97*	*10.00*
USR FORM-02 C.I.P. concrete forms, wall, job built, plywood, exterior, 8' to 16' high, 1 use, includes erecting, bracing, stripping and cleaning	96,700.00	SFC	Concrete Subcontractor	497,453	0	178,895	0	676,348	771,178	967,236
(Note: Material cost for RS MEANS CostWorks 2008 item number 03 11 1385 4600.)										
				293.56	*0.00*	*890.00*	*0.00*	*1,183.56*	*1,349.51*	*1,692.59*
USR REIN-01 Reinforcing steel, in place, footings, #8 to #18,	189.00	TON	Concrete Subcontractor	55,483	0	168,210	0	223,693	255,057	319,900

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
A615, grade 60, incl access. Labor										
(Note: Material cost per RS Means CostWorks 2008 item number 03211 060 0550. Assumes 175 lbs reinforcing per cubic yard of concrete.)										
				15.36	*14.37*	*105.00*	*0.00*	*134.72*	*153.61*	*192.67*
USR CONC-02 Structural concrete, placing, walls, pumped, includes vibrating	2,150.00	CY	Concrete Subcontractor	33,015	30,893	225,750	0	289,657	330,270	414,235
				0.00	*0.00*	*1.55*	*0.00*	*1.55*	*1.77*	*2.22*
USR RTWLMT-04 Drain Pipe for Retaining Wall, 1" Sch 40 PVC	1,780.00	LF	Concrete Subcontractor	0	0	2,759	0	2,759	3,146	3,946
(Note: Material cost for RS MEANS CostWorks 2008 item number 22 11 1374 1880. Assumes pipe will be installed during during reinforcement and forming work.)										
				2.17	*0.00*	*1.98*	*0.00*	*4.15*	*4.73*	*5.93*
USR RTWLMT-05 Soil drainage mat on vertical wall, 0.8" thick	5,380.00	SY	Concrete Subcontractor	11,675	0	10,652	0	22,327	25,458	31,930
(Note: Material cost for RS MEANS CostWorks 2008 item number 33 46 2610 0190.)										
				3.32	*0.00*	*0.27*	*0.00*	*3.59*	*4.10*	*5.14*
USR CEMFIN-01 Retaining wall finishing - break ties and patch voids	5,380.00	SY	Concrete Subcontractor	17,886	0	1,453	0	19,339	22,050	27,656
(Note: Material cost for RS MEANS CostWorks 2008 item number 03 35 2960 0020.)										
				17.28	*5.64*	*4.59*	*0.00*	*27.51*	*31.37*	*39.34*
USR CEMFIN-02 Retaining wall finishing - sand blast, heavy penetration	5,380.00	SY	Concrete Subcontractor	92,945	30,360	24,694	0	147,999	168,750	211,652
(Note: Material cost for RS MEANS CostWorks 2008 item number 03 35 2960 0750.)										
Site Restoration	**1.00**	**LS**	**Landscape Subcontractor**	**36,846**	**20,496**	**183,518**	**0**	**240,860**	**274,631**	**344,451**
				6.80	*7.31*	*16.55*	*0.00*	*30.66*	*34.96*	*43.85*
USR REST-01 Seeding, bermuda grass, chewing with mulch and fertilizer, 3 lb. per M.S.F., tractor spreader	1,599.00	MSF	Landscape Subcontractor	10,877	11,690	26,463	0	49,030	55,905	70,117
(Note: Material cost based on vendor quote per pound and 3 lb. per M.S.F. application rate. Bermuda grass seed is proposed for overbank and levee disturbed areas; primarily the south side.)										
				26.39	*3.94*	*500.00*	*0.00*	*530.33*	*604.69*	*758.42*
RSM 029204001000 Sodding, bent grass sod, on level ground, over 6 M.S.F.	93.71	MSF	Landscape Subcontractor	2,473	369	46,855	0	49,697	56,665	71,072
				2,349.54	*843.71*	*11,020.00*	*0.00*	*14,213.25*	*16,206.10*	*20,326.19*
USR RESTOR-02 Tree planting - woodlands	10.00	ACR	Landscape Subcontractor	23,495	8,437	110,200	0	142,133	162,061	203,262
(Note: Assumes tree density of 100 trees per acre. Planting trees of 1-1/2" to 2" caliper. Species including ash, maple, oak, redbud, and walnut.)										
Bypass Channel - South	**1.00**	**LS**	**Bypass Channel and Levees**	**4,330,618**	**2,656,631**	**7,692,031**	**0**	**14,679,281**	**16,353,637**	**20,511,239**

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
			General Contractor							
Mobilization and Demobilization	**1.00**	**LS**	**Bypass Channel and Levees General Contractor**	**6,524**	**11,900**	**0**	**0**	**18,423**	**21,007**	**26,347**
				141.82	*263.18*	*0.00*	*0.00*	*404.99*	*461.78*	*579.18*
USR MOBIL-01 Moblization and Demobilization of Heavy Equipment	40.00	EA	Hauling Subcontractor	5,673	10,527	0	0	16,200	18,471	23,167
				141.82	*228.79*	*0.00*	*0.00*	*370.60*	*422.57*	*530.00*
USR MOBIL-02 Mobilization and Demobilization of Medium Equipment	6.00	EA	Hauling Subcontractor	851	1,373	0	0	2,224	2,535	3,180
Site Preparation	**1.00**	**LS**	**Bypass Channel and Levees General Contractor**	**227**	**22**	**465**	**0**	**714**	**714**	**896**
				0.19	*0.00*	*0.34*	*0.00*	*0.53*	*0.53*	*0.67*
USR 023707001100 Erosion control, silt fence, polypropylene, adverse conditions, 3' high	1,000.00	LF	Bypass Channel and Levees General Contractor	192	0	340	0	532	532	667
				0.32	*0.22*	*2.25*	*0.00*	*2.79*	*2.79*	*3.50*
USR 023707001250 Erosion control, hay bales, staked	20.00	LF	Bypass Channel and Levees General Contractor	6	4	45	0	56	56	70
				0.72	*0.44*	*2.00*	*0.00*	*3.16*	*3.16*	*3.96*
USR EROSION-01 Straw Wattles	40.00	LF	Bypass Channel and Levees General Contractor	29	18	80	0	126	126	159
(Note: Cost per Estimator.)										
Excavation, Hauling, and Placement	**1.00**	**LS**	**Bypass Channel and Levees General Contractor**	**942,078**	**2,252,182**	**2,308,663**	**0**	**5,502,923**	**5,890,762**	**7,388,377**

(Note: The valley fill is the portion of levees and berms around the Valley Storage sites. The levee fill is located adjacent to the Bypass Channels to adjust the channel walls for flood conditions. The retaining wall fill is estimated in the earthwork portion. The gate fill is located at one of the three gates. The remainder of fill is assumed to be used as fill for road projects. Fill volumes were determined in bank cubic yard (BCY), loose cubic yard (LCY), and embankment cubic yard (ECY) units of measure. A bulking factor of 1.2 was assumed for converting BCY to LCY. A compaction factor of 0.9 was assumed for converting LCY to ECY.)

				0.13	*0.34*	*0.00*	*0.00*	*0.47*	*0.47*	*0.59*
USR EXCAV-BY02 Hyd Excavator, 3 CY - Bypass Channel (South)	729,088.00	BCY	Bypass Channel and Levees General Contractor	97,374	246,569	0	0	343,943	343,943	431,384

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
				0.26	*0.92*	*0.00*	*0.00*	*1.18*	*1.34*	*1.69*
USR OFFRDHAUL-BY02 6x6 Articulated Off-Road Truck, 24 CY, South Bypass Channel	874,906.00	LCY	Hauling Subcontractor	228,140	802,771	0	0	1,030,912	1,175,456	1,474,293
(Note: Productivity based on estimated average haul distance, number of excavators and dump trucks used. Excavated material is hauled to five different locations within the site area: Valley Fill (99,965 BCY), Levee Fill (233,251 BCY), Retaining Wall Fill (179,424 BCY), TRWD Gate Fill (193,664 BCY), and Road Fill (22,784 BCY) where it is spread and compacted.)										
				0.07	*0.27*	*0.00*	*0.00*	*0.34*	*0.34*	*0.42*
USR SPRDFL-BY08 Backfill, 6" lifts, dozer - Bypass Channel (South) - Valley Fill	119,958.00	LCY	Bypass Channel and Levees General Contractor	8,362	32,123	0	0	40,485	40,485	50,777
				0.08	*0.15*	*0.00*	*0.00*	*0.23*	*0.23*	*0.29*
USR COMP-BY08 Compaction, riding vibrating roller, pad foot, single drum, 84" wide, 6" lifts, 5 passes - Bypass Channel (South) - Valley Fill	107,962.00	ECY	Bypass Channel and Levees General Contractor	8,978	15,687	0	0	24,665	24,665	30,936
				0.07	*0.27*	*0.00*	*0.00*	*0.34*	*0.34*	*0.42*
USR SPRDFL-BY09 Backfill, 6" lifts, dozer - Bypass Channel (South) - Levee Fill	279,901.00	LCY	Bypass Channel and Levees General Contractor	19,511	74,654	0	0	94,165	94,165	118,105
				0.08	*0.14*	*0.00*	*0.00*	*0.23*	*0.23*	*0.29*
USR COMP-BY09 Compaction, riding vibrating roller, pad foot, single drum, 84" wide, 6" lifts, 5 passes - Bypass Channel (South) - Levee Fill	251,911.00	ECY	Bypass Channel and Levees General Contractor	20,948	36,454	0	0	57,402	57,402	71,995
				0.07	*0.27*	*0.00*	*0.00*	*0.34*	*0.34*	*0.42*
USR SPRDFL-BY10 Backfill, 6" lifts, dozer - Bypass Channel (South) - Retaining Wall Fill	215,309.00	LCY	Bypass Channel and Levees General Contractor	15,008	57,427	0	0	72,435	72,435	90,850
				0.08	*0.14*	*0.00*	*0.00*	*0.23*	*0.23*	*0.29*
USR COMP-BY10 Compaction, riding vibrating roller, pad foot, single drum, 84" wide, 6" lifts, 5 passes - Bypass Channel (South) - Retaining Wall Fill	193,778.00	ECY	Bypass Channel and Levees General Contractor	16,113	28,042	0	0	44,155	44,155	55,381
				0.07	*0.27*	*0.00*	*0.00*	*0.34*	*0.34*	*0.42*
USR SPRDFL-BY11 Backfill, 6" lifts, dozer - Bypass Channel (South) - Clear Fork Gate Fill	232,397.00	LCY	Bypass Channel and Levees General Contractor	16,199	62,067	0	0	78,267	78,267	98,164
				0.08	*0.14*	*0.00*	*0.00*	*0.23*	*0.23*	*0.29*
USR COMP-BY11 Compaction, riding vibrating roller, pad foot, single drum, 84" wide, 6" lifts, 5	209,157.00	ECY	Bypass Channel and Levees General Contractor	17,392	30,295	0	0	47,687	47,687	59,811

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
passes - Bypass Channel (South) - Clear Fork Gate Fill										
				0.07	*0.26*	*0.00*	*0.00*	*0.33*	*0.33*	*0.42*
USR SPRDFL-BY12 Backfill, 6" lifts, dozer - Bypass Channel (South) - Road Fill	27,341.00	LCY	Bypass Channel and Levees General Contractor	1,906	7,245	0	0	9,151	9,151	11,477
				0.08	*0.15*	*0.00*	*0.00*	*0.23*	*0.23*	*0.29*
USR COMP-BY12 Compaction, riding vibrating roller, pad foot, single drum, 84" wide, 6" lifts, 5 passes - Bypass Channel (South) - Road Fill	24,607.00	ECY	Bypass Channel and Levees General Contractor	2,046	3,592	0	0	5,638	5,638	7,071
				2.64	*2.60*	*9.35*	*0.00*	*14.59*	*14.59*	*18.30*
USR CFFRDAM-01 Coffer Dam, Sheet Piling, Steel, 38 psf, 25' Excavation, Drive, Extract, and Salvage - 420' long by 30' tall, removed at completion	12,600.00	SF	Bypass Channel and Levees General Contractor	33,274	32,725	117,810	0	183,809	183,809	230,539
(Note: Cost and productivity based on RS MEANS 2008 Costworks Item 31 41 1610 1900.)										
				49.50	*352.16*	*40.00*	*0.00*	*441.66*	*441.66*	*553.94*
USR CARE-01 Care of water - pumps	332.00	DAY	Bypass Channel and Levees General Contractor	16,435	116,915	13,280	0	146,631	146,631	183,909
(Note: 4 pumps operating for 83 days. Assumes 2 pumps discharge to 1 common settling basin and outfall. Skid mounted 6" centrifugal pump, 100' of hose (5 sections). Crew and equipment to check on pumps daily. Allowance per estimator to cover miscellaneous materials.)										
				49.55	*352.16*	*20.00*	*0.00*	*421.70*	*421.70*	*528.91*
USR CARE-02 Care of water - settling basin	164.00	DAY	Bypass Channel and Levees General Contractor	8,125	57,753	3,280	0	69,159	69,159	86,741
(Note: 2 settling basins operating for 83 days each. Skid mounted 6" centrifugal pump, 100' of hose (5 sections). Crew and equipment to check on settling basin daily. Allowance per estimator to cover miscellaneous materials.)										
				63.66	*15.51*	*50.00*	*0.00*	*129.17*	*129.17*	*162.01*
USR CARE-03 Care of water - discharge piping	164.00	DAY	Bypass Channel and Levees General Contractor	10,440	2,543	8,200	0	21,184	21,184	26,569
(Note: 2 discharge piping systems operating for 83 days each. Crew and equipment to check on discharge piping daily. Allowance per estimator to cover miscellaneous materials.)										
				57.34	*15.51*	*20.00*	*0.00*	*92.85*	*92.85*	*116.45*
USR CARE-04 Care of water - outfall	164.00	DAY	Bypass Channel and Levees General Contractor	9,404	2,543	3,280	0	15,227	15,227	19,099
(Note: 2 outfalls operating for 83 days each. Crew and equipment to check on outfall daily. Allowance per estimator to cover miscellaneous materials.)										
				2.12	*3.04*	*8.50*	*0.00*	*13.66*	*15.58*	*19.54*
USR HWYHAUL-18 Highway Haul, 17 CY End Dump, Import	109,363.00	LCY	Hauling Subcontractor	231,758	332,589	929,586	0	1,493,932	1,703,396	2,136,452

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
Material - structural fill - Bypass Channel (South)										
(Note: Material cost per Estimator. Cost based on previous work of similar scope. Assumes 60 minute round trip haul time.)										
				0.18	*0.26*	*0.00*	*0.00*	*0.44*	*0.44*	*0.55*
USR MATPLC-04 Material Placement - structural fill - Bypass Channel (South)	109,363.00	LCY	Bypass Channel and Levees General Contractor	19,486	28,404	0	0	47,890	47,890	60,066
				0.10	*0.18*	*0.00*	*0.00*	*0.27*	*0.27*	*0.34*
USR COMP-BY14 Compaction, riding vibrating roller, pad foot, single drum, 84" wide, 6" lifts, 5 passes - structual fill - Bypass Channel (South)	98,426.00	ECY	Bypass Channel and Levees General Contractor	9,821	17,239	0	0	27,061	27,061	33,940
				2.12	*3.04*	*33.00*	*0.00*	*38.16*	*43.51*	*54.57*
USR HWYHAUL-16 Highway Haul, 17 CY End Dump, Import Material - gravel drainage behind retaining walls - Bypass Channel (South)	6,323.00	LCY	Hauling Subcontractor	13,399	19,229	208,659	0	241,288	275,119	345,062
(Note: Material cost for RS MEANS CostWorks 2008 item number 31 05 1610 0320. Assumes 60 minute round trip haul time.)										
				0.18	*0.26*	*0.00*	*0.00*	*0.44*	*0.44*	*0.55*
USR MATPLC-02 Material Placement - gravel drainage behind retaining walls - Bypass Channel (South)	6,323.00	LCY	Bypass Channel and Levees General Contractor	1,127	1,642	0	0	2,769	2,769	3,473
				2.58	*5.70*	*21.50*	*0.00*	*29.78*	*29.78*	*37.35*
USR STREST-02 Screened loam, spread with 200 H.P. dozer, includes load at pit and haul, 5 miles round trip, excludes compaction	29,904.00	LCY	Bypass Channel and Levees General Contractor	77,152	170,445	642,936	0	890,534	890,534	1,116,935
RSM STREST-01 For 5 mile haul, add										
				10.48	*12.86*	*67.00*	*0.00*	*90.33*	*90.33*	*113.30*
USR RIPRAP-01 Rip-rap, random, broken stone, 3/8 to 1/4 C.Y. pieces, machine placed for slope protection, grouted	5,696.00	SY	Bypass Channel and Levees General Contractor	59,679	73,226	381,632	0	514,537	514,537	645,348
(Note: Cost and productivity based on RS MEANS 2008 Costworks Item 31 37 1310 0110.)										
Pavement, Sidewalks, Curbs, and Gutter	**1.00**	**LS**	**Concrete Subcontractor**	**103,996**	**0**	**364,267**	**0**	**468,263**	**533,918**	**669,657**
				0.69	*0.00*	*2.27*	*0.00*	*2.96*	*3.37*	*4.23*
USR PVSWCG-01 Sidewalk, concrete, cast-in-place with 6 x 6 -	54,477.00	SF	Concrete Subcontractor	37,395	0	123,663	0	161,058	183,640	230,327

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
W1.4 x W1.4 mesh, broomed finish, 3000 psi, 5" thick, excludes base										
(Note: Cost and productivity based on RS MEANS 2008 Costworks Item 32 06 1010 0350.)										
				0.73	*0.00*	*2.65*	*0.00*	*3.38*	*3.86*	*4.84*
USR PVSWCG-02 Sidewalk, concrete, cast-in-place with 6 x 6 - W1.4 x W1.4 mesh, broomed finish, 3000 psi, 6" thick, excludes base	90,794.00	SF	Concrete Subcontractor	66,601	0	240,604	0	307,205	350,279	439,331
(Note: Cost and productivity based on RS MEANS 2008 Costworks Item 32 06 1010 0400.)										
Retaining Walls	**1.00**	**LS**	**Concrete Subcontractor**	**3,226,126**	**365,654**	**4,752,125**	**0**	**8,343,906**	**9,513,805**	**11,932,509**
(Note: Lower retaining wall is approximately 4,200 feet long. The footing is 16' wide and 1'-6" thick. The wall is 1'-2" thick and 12' high. Middle retaining wall is approximately 4,150 feet long. The footing is 11'-6" wide and 1'-6" thick. The wall is 1'-2" thick and 11'-6" high. Upper retaining wall is approximately 4,150 feet long. The footing is between 11'-3" and 16' wide and between 1'-8" and 1'-10" thick. The wall is between 1'-5.5" and 1'-9" thick and between 11'-4" and 15'-2" high.)										
				294.42	*37.50*	*490.31*	*0.00*	*822.23*	*937.52*	*1,175.86*
Lower Wall	**4,150.00**	**LF**	**Concrete Subcontractor**	**1,221,858**	**155,625**	**2,034,776**	**0**	**3,412,259**	**3,890,692**	**4,879,827**
				1.91	*0.49*	*0.00*	*0.00*	*2.40*	*2.73*	*3.43*
USR BASEPRP-01 Grading for footing	8,300.00	SY	Concrete Subcontractor	15,814	4,088	0	0	19,903	22,693	28,462
				2.30	*1.11*	*0.00*	*0.00*	*3.41*	*3.88*	*4.87*
USR BASEPRP-02 Compaction, around structures and trenches, 4 passes, 6" lift, 1 ton roller	8,300.00	SY	Concrete Subcontractor	19,068	9,206	0	0	28,273	32,237	40,433
				1.91	*0.49*	*7.83*	*0.00*	*10.23*	*11.66*	*14.63*
USR BASEPRP-03 Gravel base for retaining wall footing	8,300.00	SY	Concrete Subcontractor	15,814	4,088	64,989	0	84,892	96,794	121,402
(Note: Material cost for RS MEANS CostWorks 2008 item number 31 23 2317 0600.)										
				2.18	*0.00*	*4.91*	*0.00*	*7.09*	*8.09*	*10.15*
USR FORM-01 C.I.P. concrete forms, footing, spread, plywood, 1 use, includes erecting, bracing, stripping and cleaning	15,000.00	SFC	Concrete Subcontractor	32,773	0	73,650	0	106,423	121,344	152,194
(Note: Material cost for RS MEANS CostWorks 2008 item number 03 11 1345 0020.)										
				293.56	*0.00*	*890.00*	*0.00*	*1,183.56*	*1,349.51*	*1,692.59*
USR REIN-01 Reinforcing steel, in place, footings, #8 to #18, A615, grade 60, incl access. Labor	388.00	TON	Concrete Subcontractor	113,901	0	345,320	0	459,221	523,609	656,727
(Note: Material cost per RS Means CostWorks 2008 item number 03211 060 0550. Assumes 175 lbs reinforcing per cubic yard of concrete.)										
				9.21	*8.62*	*105.00*	*0.00*	*122.83*	*140.06*	*175.66*
USR CONC-01 Structural	4,430.00	CY	Concrete	40,815	38,192	465,150	0	544,157	620,454	778,192

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
concrete, placing, continuous footing, shallow, pumped, includes vibrating			Subcontractor							
				5.14	*0.00*	*1.85*	*0.00*	*6.99*	*7.97*	*10.00*
USR FORM-02 C.I.P. concrete forms, wall, job built, plywood, exterior, 8' to 16' high, 1 use, includes erecting, bracing, stripping and cleaning	126,210.00	SFC	Concrete Subcontractor	649,260	0	233,489	0	882,749	1,006,519	1,262,407
(Note: Material cost for RS MEANS CostWorks 2008 item number 03 11 1385 4600.)										
				293.56	*0.00*	*890.00*	*0.00*	*1,183.56*	*1,349.51*	*1,692.59*
USR REIN-01 Reinforcing steel, in place, footings, #8 to #18, A615, grade 60, incl access. Labor	369.00	TON	Concrete Subcontractor	108,324	0	328,410	0	436,734	497,968	624,567
(Note: Material cost per RS Means CostWorks 2008 item number 03211 060 0550. Assumes 175 lbs reinforcing per cubic yard of concrete.)										
				15.36	*14.37*	*105.00*	*0.00*	*134.72*	*153.61*	*192.67*
USR CONC-02 Structural concrete, placing, walls, pumped, includes vibrating	4,210.00	CY	Concrete Subcontractor	64,647	60,492	442,050	0	567,189	646,715	811,130
				0.00	*0.00*	*1.55*	*0.00*	*1.55*	*1.77*	*2.22*
USR RTWLMT-04 Drain Pipe for Retaining Wall, 1" Sch 40 PVC	2,330.00	LF	Concrete Subcontractor	0	0	3,612	0	3,612	4,118	5,165
(Note: Material cost for RS MEANS CostWorks 2008 item number 22 11 1374 1880. Assumes pipe will be installed during during reinforcement and forming work.)										
				0.00	*0.00*	*7.55*	*0.00*	*7.55*	*8.61*	*10.80*
USR RTWLMT-07 Drain pipe for retaining wall, 4" Sch 40 PVC	21.00	EA	Concrete Subcontractor	0	0	159	0	159	181	227
(Note: 200' spacing for lower level wall flap gate drains below normal pool elevation. Material cost for RS MEANS CostWorks 2008 item number 22 11 1374 6600. Assumes pipe will be installed during during reinforcement)										
				30.32	*0.00*	*500.00*	*0.00*	*530.32*	*604.67*	*758.40*
USR RTWLMT-06 Flap gates, 4"	60.00	EA	Concrete Subcontractor	1,819	0	30,000	0	31,819	36,280	45,504
(Note: Drains for lower level wall below normal pool elevation. Material cost from vendor quote.)										
				2.17	*0.00*	*1.98*	*0.00*	*4.15*	*4.73*	*5.93*
USR RTWLMT-05 Soil drainage mat on vertical wall, 0.8" thick	7,010.00	SY	Concrete Subcontractor	15,212	0	13,880	0	29,092	33,171	41,604
(Note: Material cost for RS MEANS CostWorks 2008 item number 33 46 2610 0190.)										
				3.32	*0.00*	*0.27*	*0.00*	*3.59*	*4.10*	*5.14*
USR CEMFIN-01 Retaining wall finishing - break ties and patch voids	7,010.00	SY	Concrete Subcontractor	23,305	0	1,893	0	25,198	28,731	36,035
(Note: Material cost for RS MEANS CostWorks 2008 item number 03 35 2960 0020.)										
				17.28	*5.64*	*4.59*	*0.00*	*27.51*	*31.37*	*39.34*

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
USR CEMFIN-02 Retaining wall finishing - sand blast, heavy penetration	7,010.00	SY	Concrete Subcontractor	121,105	39,559	32,176	0	192,839	219,877	275,777
(Note: Material cost for RS MEANS CostWorks 2008 item number 03 35 2960 0750.)										
				254.56	*23.23*	*305.42*	*0.00*	*583.21*	*664.99*	*834.05*
Middle Wall	**4,150.00**	**LF**	**Concrete Subcontractor**	**1,056,429**	**96,407**	**1,267,499**	**0**	**2,420,334**	**2,759,689**	**3,461,288**
				1.91	*0.49*	*0.00*	*0.00*	*2.40*	*2.73*	*3.43*
USR BASEPRP-01 Grading for footing	6,230.00	SY	Concrete Subcontractor	11,870	3,069	0	0	14,939	17,034	21,364
				2.30	*1.11*	*0.00*	*0.00*	*3.41*	*3.88*	*4.87*
USR BASEPRP-02 Compaction, around structures and trenches, 4 passes, 6" lift, 1 ton roller	6,230.00	SY	Concrete Subcontractor	14,312	6,910	0	0	21,222	24,197	30,349
				1.91	*0.49*	*7.83*	*0.00*	*10.23*	*11.66*	*14.63*
USR BASEPRP-03 Gravel base for retaining wall footing	6,230.00	SY	Concrete Subcontractor	11,870	3,069	48,781	0	63,720	72,654	91,125
(Note: Material cost for RS MEANS CostWorks 2008 item number 31 23 2317 0600.)										
				2.18	*0.00*	*4.91*	*0.00*	*7.09*	*8.09*	*10.15*
USR FORM-01 C.I.P. concrete forms, footing, spread, plywood, 1 use, includes erecting, bracing, stripping and cleaning	12,480.00	SFC	Concrete Subcontractor	27,267	0	61,277	0	88,544	100,958	126,625
(Note: Material cost for RS MEANS CostWorks 2008 item number 03 11 1345 0020.)										
				293.56	*0.00*	*890.00*	*0.00*	*1,183.56*	*1,349.51*	*1,692.59*
USR REIN-01 Reinforcing steel, in place, footings, #8 to #18, A615, grade 60, incl access. Labor	233.00	TON	Concrete Subcontractor	68,400	0	207,370	0	275,770	314,435	394,374
(Note: Material cost per RS Means CostWorks 2008 item number 03211 060 0550. Assumes 175 lbs reinforcing per cubic yard of concrete.)										
				9.21	*8.62*	*105.00*	*0.00*	*122.83*	*140.06*	*175.66*
USR CONC-01 Structural concrete, placing, continuous footing, shallow, pumped, includes vibrating	2,660.00	CY	Concrete Subcontractor	24,508	22,933	279,300	0	326,740	372,552	467,267
				5.14	*0.00*	*1.85*	*0.00*	*6.99*	*7.97*	*10.00*
USR FORM-02 C.I.P. concrete forms, wall, job built, plywood, exterior, 8 to 16' high, 1 use, includes erecting, bracing, stripping and cleaning	95,480.00	SFC	Concrete Subcontractor	491,176	0	176,638	0	667,814	761,449	955,033
(Note: Material cost for RS MEANS CostWorks 2008 item number 03 11 1385 4600.)										
				2.08	*0.00*	*0.70*	*0.00*	*2.78*	*3.17*	*3.98*

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
RSM 031104552550 C.I.P. concrete forms, wall, job built, plywood, exterior, 8' to 16' high, 4 use, includes erecting, bracing, stripping and cleaning	95,480.00	SFC	Concrete Subcontractor	198,958	0	66,836	0	265,794	303,060	380,108
				293.56	*0.00*	*890.00*	*0.00*	*1,183.56*	*1,349.51*	*1,692.59*
USR REIN-01 Reinforcing steel, in place, footings, #8 to #18, A615, grade 60, incl access. Labor	186.00	TON	Concrete Subcontractor	54,602	0	165,540	0	220,142	251,008	314,823
(Note: Material cost per RS Means CostWorks 2008 item number 03211 060 0550. Assumes 175 lbs reinforcing per cubic yard of concrete.)										
				15.36	*14.37*	*105.00*	*0.00*	*134.72*	*153.61*	*192.67*
USR CONC-02 Structural concrete, placing, walls, pumped, includes vibrating	2,120.00	CY	Concrete Subcontractor	32,554	30,462	222,600	0	285,616	325,662	408,455
				0.00	*0.00*	*1.55*	*0.00*	*1.55*	*1.77*	*2.22*
USR RTWLMT-04 Drain Pipe for Retaining Wall, 1" Sch 40 PVC	1,830.00	LF	Concrete Subcontractor	0	0	2,837	0	2,837	3,234	4,056
(Note: Material cost for RS MEANS CostWorks 2008 item number 22 11 1374 1880. Assumes pipe will be installed during during reinforcement and forming work.)										
				2.17	*0.00*	*1.98*	*0.00*	*4.15*	*4.73*	*5.93*
USR RTWLMT-05 Soil drainage mat on vertical wall, 0.8" thick	5,310.00	SY	Concrete Subcontractor	11,523	0	10,514	0	22,037	25,126	31,514
(Note: Material cost for RS MEANS CostWorks 2008 item number 33 46 2610 0190.)										
				3.32	*0.00*	*0.27*	*0.00*	*3.59*	*4.10*	*5.14*
USR CEMFIN-01 Retaining wall finishing - break ties and patch voids	5,310.00	SY	Concrete Subcontractor	17,654	0	1,434	0	19,087	21,764	27,296
(Note: Material cost for RS MEANS CostWorks 2008 item number 03 35 2960 0020.)										
				17.28	*5.64*	*4.59*	*0.00*	*27.51*	*31.37*	*39.34*
USR CEMFIN-02 Retaining wall finishing - sand blast, heavy penetration	5,310.00	SY	Concrete Subcontractor	91,735	29,965	24,373	0	146,074	166,555	208,898
(Note: Material cost for RS MEANS CostWorks 2008 item number 03 35 2960 0750.)										
				225.68	*27.05*	*345.20*	*0.00*	*597.93*	*681.77*	*855.09*
Upper Wall	**4,200.00**	**LF**	**Concrete Subcontractor**	**947,839**	**113,623**	**1,449,851**	**0**	**2,511,313**	**2,863,424**	**3,591,395**
				1.91	*0.49*	*0.00*	*0.00*	*2.40*	*2.73*	*3.43*
USR BASEPRP-01 Grading for footing	8,400.00	SY	Concrete Subcontractor	16,005	4,137	0	0	20,142	22,967	28,805
				2.30	*1.11*	*0.00*	*0.00*	*3.41*	*3.88*	*4.87*
USR BASEPRP-02 Compaction, around structures and trenches, 4	8,400.00	SY	Concrete Subcontractor	19,297	9,317	0	0	28,614	32,626	40,920

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
passes, 6" lift, 1 ton roller										
				1.91	*0.49*	*7.83*	*0.00*	*10.23*	*11.66*	*14.63*
USR BASEPRP-03 Gravel base for retaining wall footing	8,400.00	SY	Concrete Subcontractor	16,005	4,137	65,772	0	85,914	97,960	122,865
(Note: Material cost for RS MEANS CostWorks 2008 item number 31 23 2317 0600.)										
				2.18	*0.00*	*4.91*	*0.00*	*7.09*	*8.09*	*10.15*
USR FORM-01 C.I.P. concrete forms, footing, spread, plywood, 1 use, includes erecting, bracing, stripping and cleaning	12,650.00	SFC	Concrete Subcontractor	27,638	0	62,112	0	89,750	102,334	128,350
(Note: Material cost for RS MEANS CostWorks 2008 item number 03 11 1345 0020.)										
				293.56	*0.00*	*890.00*	*0.00*	*1,183.56*	*1,349.51*	*1,692.59*
USR REIN-01 Reinforcing steel, in place, footings, #8 to #18, A615, grade 60, incl access. Labor	328.00	TON	Concrete Subcontractor	96,288	0	291,920	0	388,208	442,638	555,171
(Note: Material cost per RS Means CostWorks 2008 item number 03211 060 0550. Assumes 175 lbs reinforcing per cubic yard of concrete.)										
				9.21	*8.62*	*105.00*	*0.00*	*122.83*	*140.06*	*175.66*
USR CONC-01 Structural concrete, placing, continuous footing, shallow, pumped, includes vibrating	3,740.00	CY	Concrete Subcontractor	34,458	32,243	392,700	0	459,401	523,814	656,984
				5.14	*0.00*	*1.85*	*0.00*	*6.99*	*7.97*	*10.00*
USR FORM-02 C.I.P. concrete forms, wall, job built, plywood, exterior, 8' to 16' high, 1 use, includes erecting, bracing, stripping and cleaning	100,830.00	SFC	Concrete Subcontractor	518,698	0	186,536	0	705,234	804,115	1,008,546
(Note: Material cost for RS MEANS CostWorks 2008 item number 03 11 1385 4600.)										
				293.56	*0.00*	*890.00*	*0.00*	*1,183.56*	*1,349.51*	*1,692.59*
USR REIN-01 Reinforcing steel, in place, footings, #8 to #18, A615, grade 60, incl access. Labor	196.00	TON	Concrete Subcontractor	57,538	0	174,440	0	231,978	264,503	331,748
(Note: Material cost per RS Means CostWorks 2008 item number 03211 060 0550. Assumes 175 lbs reinforcing per cubic yard of concrete.)										
				15.36	*14.37*	*105.00*	*0.00*	*134.72*	*153.61*	*192.67*
USR CONC-02 Structural concrete, placing, walls, pumped, includes vibrating	2,240.00	CY	Concrete Subcontractor	34,397	32,186	235,200	0	301,783	344,095	431,575
				0.00	*0.00*	*1.55*	*0.00*	*1.55*	*1.77*	*2.22*
USR RTWLMT-04 Drain Pipe for Retaining Wall, 1" Sch 40 PVC	1,850.00	LF	Concrete Subcontractor	0	0	2,868	0	2,868	3,270	4,101
(Note: Material cost for RS MEANS CostWorks 2008 item number 22 11 1374 1880. Assumes pipe will be installed during during reinforcement and forming work.)										

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
				2.17	*0.00*	*1.98*	*0.00*	*4.15*	*4.73*	*5.93*
USR RTWLMT-05 Soil drainage mat on vertical wall, 0.8" thick	5,600.00	SY	Concrete Subcontractor	12,152	0	11,088	0	23,240	26,499	33,235
(Note: Material cost for RS MEANS CostWorks 2008 item number 33 46 2610 0190.)										
				3.32	*0.00*	*0.27*	*0.00*	*3.59*	*4.10*	*5.14*
USR CEMFIN-01 Retaining wall finishing - break ties and patch voids	5,600.00	SY	Concrete Subcontractor	18,618	0	1,512	0	20,130	22,952	28,787
(Note: Material cost for RS MEANS CostWorks 2008 item number 03 35 2960 0020.)										
				17.28	*5.64*	*4.59*	*0.00*	*27.51*	*31.37*	*39.34*
USR CEMFIN-02 Retaining wall finishing - sand blast, heavy penetration	5,600.00	SY	Concrete Subcontractor	96,745	31,602	25,704	0	154,051	175,651	220,307
(Note: Material cost for RS MEANS CostWorks 2008 item number 03 35 2960 0750.)										
Site Restoration	**1.00**	**LS**	**Landscape Subcontractor**	**51,666**	**26,873**	**266,512**	**0**	**345,051**	**393,431**	**493,453**
				6.80	*7.31*	*16.55*	*0.00*	*30.66*	*34.96*	*43.85*
USR REST-01 Seeding, bermuda grass, chewing with mulch and fertilizer, 3 lb. per M.S.F., tractor spreader	1,869.00	MSF	Landscape Subcontractor	12,714	13,664	30,932	0	57,309	65,345	81,957
(Note: Material cost based on vendor quote per pound and 3 lb. per M.S.F. application rate. Bermuda grass seed is proposed for overbank and levee disturbed areas; primarily the south side.)										
				26.39	*3.94*	*500.00*	*0.00*	*530.33*	*604.69*	*758.42*
RSM 029204001000 Sodding, bent grass sod, on level ground, over 6 M.S.F.	140.56	MSF	Landscape Subcontractor	3,709	554	70,280	0	74,543	84,995	106,603
				2,349.54	*843.71*	*11,020.00*	*0.00*	*14,213.25*	*16,206.10*	*20,326.19*
USR RESTOR-02 Tree planting - woodlands	15.00	ACR	Landscape Subcontractor	35,243	12,656	165,300	0	213,199	243,091	304,893
(Note: Assumes tree density of 100 trees per acre. Planting trees of 1-1/2" to 2" caliper. Species including ash, maple, oak, redbud, and walnut.)										
15 Flood Control and Diversion Structures	**1.00**	**LS**	**Isolation Gate General Contractor - Clear Fork and TRWD**	**3,199,172**	**763,499**	**2,980,628**	**8,431,440**	**15,374,738**	**17,259,136**	**21,646,944**
(Note: Three (3) gate control structures (Clear Fork, Trinity Point and TRWD) will be constructed for the project. All three (3) structures will be constructed of concrete with battered foundation piles providing support to bedrock. The Clear Fork gate will also have a sheet pile cutoff wall. Each gate will have one large (24 feet x 17 feet) vertical roller gate and at least one small (12 feet x 10 feet) vertical roller gate (Trinity Point Gate - two). The large gate will be used for normal water control and boat access to the interior area, while the smaller gate(s) will be used to seal off pedestrian access during flooding conditions. Gates can be inspected when open through internal access areas. In addition, each gate will have an enclosed control room and instrumentation system for monitoring the gates. Budgetary information on gate construction and installation costs was provided by General Electric Hydro.)										
05 Clear Fork	**1.00**	**LS**	**Isolation Gate General Contractor -**	**1,317,356**	**380,809**	**1,324,103**	**4,295,720**	**7,317,987**	**8,219,509**	**10,309,163**

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
			Clear Fork and TRWD							
Mobilization and Demobilization	**1.00**	**LS**		**7,988**	**9,298**	**0**	**0**	**17,286**	**18,526**	**23,236**
				141.82	*263.18*	*0.00*	*0.00*	*404.99*	*461.78*	*579.18*
USR MOBIL-01 Moblization and Demobilization of Heavy Equipment	20.00	EA	Hauling Subcontractor	2,836	5,264	0	0	8,100	9,236	11,584
				141.82	*228.79*	*0.00*	*0.00*	*370.60*	*422.57*	*530.00*
USR MOBIL-02 Mobilization and Demobilization of Medium Equipment	2.00	EA	Hauling Subcontractor	284	458	0	0	741	845	1,060
				2,433.94	*1,788.64*	*0.00*	*0.00*	*4,222.57*	*4,222.57*	*5,296.08*
RSM 024559000200 Mobilization, 75 ton, set up and remove crane, with pile leads and pile hammer	2.00	EA	Isolation Gate General Contractor - Clear Fork and TRWD	4,868	3,577	0	0	8,445	8,445	10,592
Site Preparation	**1.00**	**LS**	**Isolation Gate General Contractor - Clear Fork and TRWD**	**34,480**	**47,106**	**22,795**	**0**	**104,381**	**105,319**	**132,095**
				15.00	*10.00*	*15.00*	*0.00*	*40.00*	*40.00*	*50.17*
USR HAUL-04 Access Roads	1,500.00	LF	Isolation Gate General Contractor - Clear Fork and TRWD	22,500	15,000	22,500	0	60,000	60,000	75,254
(Note: Per Estimator. Cost based on professional judgment.)										
				0.15	*1.13*	*0.00*	*0.00*	*1.28*	*1.28*	*1.60*
USR STPREP-BY01 Scraper w/Operator, strip soil - Gate Structures	5,808.00	LCY	Isolation Gate General Contractor - Clear Fork and TRWD	860	6,553	0	0	7,414	7,414	9,298
				0.10	*0.29*	*0.00*	*0.00*	*0.39*	*0.39*	*0.49*
USR STPREP-BY02 Dozer w/Operator, clear, grub and stack - Gate Structures	5,808.00	LCY	Isolation Gate General Contractor - Clear Fork and TRWD	568	1,701	0	0	2,269	2,269	2,846
				1.32	*3.42*	*0.00*	*0.00*	*4.74*	*4.74*	*5.95*
USR SITEPREP-01 Screening and Stockpiling of Cleared and Grubbed Material	5,808.00	LCY	Isolation Gate General Contractor - Clear Fork and TRWD	7,672	19,885	0	0	27,557	27,557	34,562

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
(Note: Screening of stripped soil. Assumes wheel loader w/operator, screening plant, and laborer.)										
				0.95	*1.36*	*0.00*	*0.00*	*2.30*	*2.63*	*3.30*
USR HWYHAUL-12 Highway Haul, 17 CY End Dump, Removal of Screened Material	2,904.00	LCY	Hauling Subcontractor	2,749	3,945	0	0	6,694	7,632	9,572
(Note: Assumes 1/2 of screened material will be hauled off-site for disposal at the city landfill. Remaining material will be left on-site and used for site restoration.)										
				0.19	*0.00*	*0.34*	*0.00*	*0.53*	*0.53*	*0.67*
USR 023707001100 Erosion control, silt fence, polypropylene, adverse conditions, 3' high	500.00	LF	Isolation Gate General Contractor - Clear Fork and TRWD	96	0	170	0	266	266	334
				0.32	*0.22*	*2.25*	*0.00*	*2.79*	*2.79*	*3.50*
USR 023707001250 Erosion control, hay bales, staked	20.00	LF	Isolation Gate General Contractor - Clear Fork and TRWD	6	4	45	0	56	56	70
				0.72	*0.44*	*2.00*	*0.00*	*3.16*	*3.16*	*3.96*
USR EROSION-01 Straw Wattles	40.00	LF	Isolation Gate General Contractor - Clear Fork and TRWD	29	18	80	0	126	126	159
(Note: Cost per Estimator.)										
Excavation, Hauling, and Placement	**1.00**	**LS**	**Isolation Gate General Contractor - Clear Fork and TRWD**	**123,120**	**235,936**	**423,001**	**0**	**782,057**	**782,057**	**980,880**
(Note: Embankment road....)										
				2.64	*2.60*	*9.35*	*0.00*	*14.59*	*14.59*	*18.30*
USR CFFRDAM-01 Coffer Dam, Sheet Piling, Steel, 38 psf, 25' Excavation, Drive, Extract, and Salvage - 300 LF long by 30 LF, removed at completion	9,000.00	SF	Isolation Gate General Contractor - Clear Fork and TRWD	23,767	23,375	84,150	0	131,292	131,292	164,671
(Note: Cost and productivity based on RS MEANS 2008 Costworks Item 31 41 1610 1900.)										
				49.50	*352.16*	*40.00*	*0.00*	*441.66*	*441.66*	*553.94*
USR CARE-01 Care of water - pumps	112.00	DAY	Isolation Gate General Contractor - Clear Fork and TRWD	5,544	39,441	4,480	0	49,466	49,466	62,041
(Note: 2 pumps operating for 56 days each. Assumes the 2 pumps discharge to 1 common settling basins and outfall. Skid mounted 6" centrifugal pump, 100' of hose (5 sections). Allowance per estimator to cover miscellaneous materials.)										
				49.55	*352.16*	*20.00*	*0.00*	*421.70*	*421.70*	*528.91*
USR CARE-02 Care of water -	56.00	DAY	Isolation Gate	2,775	19,721	1,120	0	23,615	23,615	29,619

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
settling basin			General Contractor - Clear Fork and TRWD							
(Note: Assumes the 4 pumps discharge to 2 settling basins and outfalls. Skid mounted 6" centrifugal pump, 100' of hose (5 sections). Crew and equipment to check on settling basin daily. Allowance per estimator to cover miscellaneous materials.)										
				63.66	*15.51*	*50.00*	*0.00*	*129.17*	*129.17*	*162.01*
USR CARE-03 Care of water - discharge piping	56.00	DAY	Isolation Gate General Contractor - Clear Fork and TRWD	3,565	868	2,800	0	7,233	7,233	9,072
(Note: Crew and equipment to check on discharge piping daily. Allowance per estimator to cover miscellaneous materials.)										
				57.34	*15.51*	*20.00*	*0.00*	*92.85*	*92.85*	*116.45*
USR CARE-04 Care of water - outfall	56.00	DAY	Isolation Gate General Contractor - Clear Fork and TRWD	3,211	868	1,120	0	5,200	5,200	6,521
(Note: Crew and equipment to check on outfall daily. Allowance per estimator to cover miscellaneous materials.)										
				4.94	*1.77*	*16.30*	*0.00*	*23.01*	*23.01*	*28.86*
RSM 022405001700 Dewatering, sump hole construction, pit with gravel collar, corrugated, 12" gravel collar, 12" corr. pipe, 16 ga, includes excavation and gravel pit	240.00	LF	Isolation Gate General Contractor - Clear Fork and TRWD	1,184	425	3,912	0	5,522	5,522	6,926
USR DRAIN-04 Sub drain system - small	1.00	LS	Isolation Gate General Contractor - Clear Fork and TRWD	15,000	0	10,000	0	25,000	25,000	31,356
(Note: Allowance per Estimator. Cost based on professional judgment.)										
				2.86	*2.56*	*37.00*	*0.00*	*42.42*	*42.42*	*53.21*
RSM 024556001300 Piles, steel, "H" sections, 50' long, HP14 X 102, excludes mobilization or demobilization	2,600.00	VLF	Isolation Gate General Contractor - Clear Fork and TRWD	7,445	6,652	96,200	0	110,297	110,297	138,338
				1.89	*1.86*	*25.71*	*0.00*	*29.47*	*29.47*	*36.96*
USR EARTH-26 Sheet piling, steel, 38 psf, 40' excavation, left in place, excludes wales	5,602.00	SF	Isolation Gate General Contractor - Clear Fork and TRWD	10,612	10,437	144,041	0	165,091	165,091	207,062
				0.13	*0.34*	*0.00*	*0.00*	*0.47*	*0.47*	*0.59*
USR EXCAV-BY01 Hyd Excavator, 3 CY - Clear Fork Gate	70,886.00	BCY	Isolation Gate General Contractor - Clear Fork and TRWD	9,467	23,973	0	0	33,440	33,440	41,942

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
				0.25	*0.88*	*0.00*	*0.00*	*1.13*	*1.13*	*1.42*
USR OFFRDHAUL-GS01 6x6 Articulated Off-Road Truck, 24 CY, Clear Fork Gate	85,063.00	LCY	Isolation Gate General Contractor - Clear Fork and TRWD	21,301	74,952	0	0	96,253	96,253	120,724
(Note: Productivity based on estimated average haul distance, number of excavators and dump trucks used.)										
				0.07	*0.26*	*0.00*	*0.00*	*0.33*	*0.33*	*0.42*
USR SPRDFL-GS01 Backfill, 6" lifts, dozer - Clear Fork Gate	85,063.00	LCY	Isolation Gate General Contractor - Clear Fork and TRWD	5,929	22,486	0	0	28,415	28,415	35,639
				0.08	*0.14*	*0.00*	*0.00*	*0.23*	*0.23*	*0.28*
USR COMP-GS01 Compaction, riding vibrating roller, pad foot, single drum, 84" wide, 6" lifts, 5 passes - Clear Fork Gate	76,557.00	ECY	Isolation Gate General Contractor - Clear Fork and TRWD	6,366	10,967	0	0	17,333	17,333	21,740
				1.77	*0.00*	*2.61*	*0.00*	*4.38*	*4.38*	*5.50*
USR EMBNKSPRD-02 Geotextile Subsurface Drainage Filtration, fabric ply bonded to 3-dimensional nylon mat, ideal conditions, 0.4" thick	3,334.00	SY	Isolation Gate General Contractor - Clear Fork and TRWD	5,906	0	8,702	0	14,608	14,608	18,322
(Note: Material cost for RS MEANS CostWorks 2008 item number 33 46 2610 0170.)										
				0.61	*0.87*	*50.56*	*0.00*	*52.03*	*52.03*	*65.26*
USR HWYHAUL-19 Highway Haul, 17 CY End Dump, Import Material - embankment road, 1.5" rock	1,001.00	LCY	Isolation Gate General Contractor - Clear Fork and TRWD	606	870	50,611	0	52,086	52,086	65,328
(Note: Material cost for RS MEANS CostWorks 2008 item number32 11 2323 1521. Assumes 40 minute round trip haul time.)										
				0.07	*0.37*	*0.00*	*0.00*	*0.44*	*0.44*	*0.55*
USR EMBNKSPRD-01 Spread embankment road material, dozer - 1.5" rock	1,001.00	LCY	Isolation Gate General Contractor - Clear Fork and TRWD	70	369	0	0	439	439	551
				0.12	*0.10*	*0.00*	*0.00*	*0.22*	*0.22*	*0.27*
USR EMBNKCMP-01 Compaction, riding vibrating roller, smooth drum, 48" wide, 6" lifts, 5 passes - embankment road - 1.5" rock	901.00	ECY	Isolation Gate General Contractor - Clear Fork and TRWD	109	88	0	0	196	196	246
				0.61	*0.87*	*47.50*	*0.00*	*48.97*	*48.97*	*61.43*
USR HWYHAUL-20 Highway Haul, 17 CY End Dump, Import Material - embankment road, 3/4"	334.00	LCY	Isolation Gate General Contractor - Clear Fork and	202	290	15,865	0	16,357	16,357	20,516

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
rock			TRWD							
(Note: Material cost for RS MEANS CostWorks 2008 item number 31 05 1610 0320. Assumes 40 minute round trip haul time.)										
				0.07	*0.37*	*0.00*	*0.00*	*0.44*	*0.44*	*0.55*
USR EMBNKSPRD-01 Spread embankment road material, dozer - 3/4" rock	334.00	LCY	Isolation Gate General Contractor - Clear Fork and TRWD	23	123	0	0	146	146	184
				0.12	*0.10*	*0.00*	*0.00*	*0.22*	*0.22*	*0.27*
USR EMBNKCMP-01 Compaction, riding vibrating roller, smooth drum, 48" wide, 6" lifts, 5 passes - embankment road - 3/4" rock	301.00	ECY	Isolation Gate General Contractor - Clear Fork and TRWD	36	29	0	0	66	66	82
Pavement, Sidewalks, Curbs and Gutter	**1.00**	**LS**	**Concrete Subcontractor**	**125**	**163**	**7,920**	**0**	**8,208**	**9,358**	**11,737**
				1.73	*2.26*	*110.00*	*0.00*	*113.99*	*129.98*	*163.02*
USR 027503000300 Plain cement concrete pavement, fixed form, unreinforced, 12' pass, 10" thick, includes joints, finishing, and curing	72.00	SY	Concrete Subcontractor	125	163	7,920	0	8,208	9,358	11,737
(Note: Material cost per Estimator.)										
Training Walls	**1.00**	**LS**	**Concrete Subcontractor**	**1,142,975**	**84,860**	**835,304**	**0**	**2,063,139**	**2,352,411**	**2,950,467**
				175.00	*20.00*	*105.00*	*0.00*	*300.00*	*342.06*	*429.03*
USR CONC-08 Concrete footing/slab on grade	2,526.00	CY	Concrete Subcontractor	442,050	50,520	265,230	0	757,800	864,051	1,083,720
(Note: Per Estimator. Cost based on previous work of similar scope. Assumes concrete pumping.)										
				225.00	*20.00*	*130.00*	*0.00*	*375.00*	*427.58*	*536.28*
USR CONC-03 Concrete walls	1,425.00	CY	Concrete Subcontractor	320,625	28,500	185,250	0	534,375	609,300	764,203
(Note: Per Estimator. Cost based on previous work of similar scope. Assumes concrete pumping.)										
				275.00	*20.00*	*140.00*	*0.00*	*435.00*	*495.99*	*622.09*
USR CONC-04 Concrete elevated slabs	292.00	CY	Concrete Subcontractor	80,300	5,840	40,880	0	127,020	144,829	181,650
(Note: Per Estimator. Cost based on previous work of similar scope. Assumes concrete pumping.)										
				0.00	*0.00*	*0.55*	*0.00*	*0.55*	*0.63*	*0.79*
USR CONC-05 Reinforcing bar - 175 lbs/cy	352,625.00	LB	Concrete Subcontractor	0	0	193,944	0	193,944	221,137	277,356
(Note: Per Estimator.)										
				30.00	*0.00*	*15.00*	*0.00*	*45.00*	*51.31*	*64.35*
USR CONC-14 Levee tie-in retaining walls, concrete 3' thick	10,000.00	SF	Concrete Subcontractor	300,000	0	150,000	0	450,000	513,095	643,539
(Note: Per Estimator. Cost based on previous work of similar scope. Assumes concrete pumping.)										

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
Mechanical	**1.00**	**LS**	**Mechanical Subcontractor**	**2,230**	**154**	**10,511**	**0**	**12,895**	**14,703**	**18,441**
				2.04	*0.14*	*19.00*	*0.00*	*21.18*	*24.15*	*30.28*
USR 055303000136 Floor grating, aluminum, 1-3/4" x 3/16" bearing bars @ 1-3/16" O.C., cross bars @ 4" O.C., up to 300 S.F., field fabricated from panels	125.00	SF	Mechanical Subcontractor	254	18	2,375	0	2,647	3,018	3,785
				2.04	*0.14*	*7.18*	*0.00*	*9.36*	*10.67*	*13.38*
USR METAL-01 Aluminum grating frame (Note: Per Estimator.)	100.00	LF	Mechanical Subcontractor	204	14	718	0	936	1,067	1,338
				6.36	*0.44*	*23.50*	*0.00*	*30.30*	*34.55*	*43.33*
RSM 055207000080 Railing, pipe, aluminum, satin finish, 2 rails, 1-1/2" dia, shop fabricated	28.00	LF	Mechanical Subcontractor	178	12	658	0	848	967	1,213
				11.97	*0.83*	*31.50*	*0.00*	*44.30*	*50.51*	*63.35*
RSM 055145000100 Ladder, shop fabricated, steel, 20" W, bolted to concrete, excl cage	80.00	VLF	Mechanical Subcontractor	958	66	2,520	0	3,544	4,041	5,068
				127.20	*8.79*	*1,200.00*	*0.00*	*1,336.00*	*1,523.32*	*1,910.59*
USR METAL-02 Aluminum floor access hatch - 4' x 4' (Note: Material cost per Estimator.)	1.00	EA	Mechanical Subcontractor	127	9	1,200	0	1,336	1,523	1,911
				127.20	*8.79*	*760.00*	*0.00*	*896.00*	*1,021.63*	*1,281.35*
USR METAL-02 Aluminum floor access hatch - 3' x 3' (Note: Material cost per Estimator.)	4.00	EA	Mechanical Subcontractor	509	35	3,040	0	3,584	4,087	5,125
Finishes	**1.00**	**LS**	**Building Subcontractor**	**0**	**0**	**0**	**1,110,000**	**1,110,000**	**1,265,633**	**1,587,396**
USR FINISHES-03 Painting and coating - flood control and diversion structure (Note: Allowance per Estimator. Cost based on professional judgment.)	1.00	LS	Building Subcontractor	0	0	0	110,000	110,000	125,423	157,310
USR FINISHES-04 Architectural enhancement (Note: Allowance per Estimator. Cost based on professional judgment.)	1.00	LS	Building Subcontractor	0	0	0	1,000,000	1,000,000	1,140,210	1,430,087
Flood Control Structures	**1.00**	**LS**	**Gate Control Structures Subcontractor**	**178**	**115**	**0**	**2,830,720**	**2,831,012**	**3,227,949**	**4,048,593**
				0.00	*0.00*	*0.00*	*1,700,000.00*	*1,700,000.00*	*1,938,357.00*	*2,431,147.44*
USR EQUIP-04 Gate - 24' x 17' with motor and drum hoist	1.00	EA	Gate Control Structures Subcontractor	0	0	0	1,700,000	1,700,000	1,938,357	2,431,147

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
(Note: Vendor quote - General Electric Hydro - 21 May 2004. Cost includes design, contingency, delivery to the site and installation.)										
				0.00	*0.00*	*0.00*	*750,000.00*	*750,000.00*	*855,157.50*	*1,072,565.05*
USR EQUIP-05 Gate - 12' x 10' with motor and drum hoist	1.00	EA	Gate Control Structures Subcontractor	0	0	0	750,000	750,000	855,158	1,072,565
(Note: Vendor quote - General Electric Hydro - 21 May 2004. Cost includes design, contingency, delivery to the site and installation.)										
				0.00	*0.00*	*0.00*	*273,000.00*	*273,000.00*	*311,277.33*	*390,413.68*
USR EQUIP-06 Stop log - 24' x 17'	1.00	EA	Gate Control Structures Subcontractor	0	0	0	273,000	273,000	311,277	390,414
(Note: Vendor quote - General Electric Hydro - 21 May 2004. Cost includes design, contingency, delivery to the site and installation.)										
				0.00	*0.00*	*0.00*	*85,000.00*	*85,000.00*	*96,917.85*	*121,557.37*
USR EQUIP-07 Stop log - 12' x 10'	1.00	EA	Gate Control Structures Subcontractor	0	0	0	85,000	85,000	96,918	121,557
(Note: Vendor quote - General Electric Hydro - 21 May 2004. Cost includes design, contingency, delivery to the site and installation.)										
				1.11	*0.72*	*0.00*	*142.00*	*143.83*	*163.99*	*205.69*
USR EQUIP-08 Motor housing, prefabricated building	160.00	SF	Building Subcontractor	178	115	0	22,720	23,012	26,239	32,910
(Note: Cost and productivity based on RS MEANS 2008 Costworks Item 13 34 2310 0400.)										
Electrical, Controls, and Instrumentation	**1.00**	**LS**	**Electrical Subcontractor**	**15**	**0**	**37**	**355,000**	**355,052**	**404,833**	**507,755**
USR ELEC-10 Barrier warning system - isolation gate	1.00	LS	Electrical Subcontractor	0	0	0	25,000	25,000	28,505	35,752
(Note: Allowance per Estimator. Cost based on professional judgment.)										
USR ELEC-11 Electric lights site - isolation gate	1.00	LS	Electrical Subcontractor	0	0	0	20,000	20,000	22,804	28,602
(Note: Allowance per Estimator. Cost based on professional judgment.)										
USR ELEC-09 Transformer - isolation gate	1.00	LS	Electrical Subcontractor	0	0	0	10,000	10,000	11,402	14,301
(Note: Allowance per Estimator. Cost based on professional judgment.)										
				0.00	*0.00*	*0.00*	*8.00*	*8.00*	*9.12*	*11.44*
USR ELEC-13 Underground primary service	2,500.00	LF	Electrical Subcontractor	0	0	0	20,000	20,000	22,804	28,602
(Note: Allowance per Estimator. Cost based on professional judgment.)										
				0.61	*0.00*	*1.46*	*0.00*	*2.07*	*2.36*	*2.96*
RSM 020806000400 Underground marking tape, vinyl, aluminum foil core, detectable, 2"	25.00	CLF	Electrical Subcontractor	15	0	37	0	52	59	74
USR ELEC-14 Control building electrical - isolation gate	1.00	LS	Electrical Subcontractor	0	0	0	75,000	75,000	85,516	107,257
(Note: Allowance per Estimator. Cost based on professional judgment.)										
USR ELEC-15 Security electrical - isolation gate	1.00	LS	Electrical Subcontractor	0	0	0	25,000	25,000	28,505	35,752

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
(Note: Allowance per Estimator. Cost based on professional judgment.)										
USR ELEC-12 Instrumentation - isolation gate	1.00	LS	Electrical Subcontractor	0	0	0	20,000	20,000	22,804	28,602
(Note: Allowance per Estimator. Cost based on professional judgment.)										
USR ELEC-08 Emergency backup generator	1.00	LS	Electrical Subcontractor	0	0	0	160,000	160,000	182,434	228,814
(Note: Allowance per Estimator. Cost based on professional judgment.)										
Site Restoration	**1.00**	**LS**	**Landscape Subcontractor**	**6,246**	**3,177**	**24,536**	**0**	**33,958**	**38,719**	**48,563**
				6.80	*7.31*	*16.55*	*0.00*	*30.66*	*34.96*	*43.85*
USR REST-01 Seeding, bermuda grass, chewing with mulch and fertilizer, 3 lb. per M.S.F., tractor spreader	261.40	MSF	Landscape Subcontractor	1,778	1,911	4,326	0	8,015	9,139	11,463
(Note: Material cost based on vendor quote per pound and 3 lb. per M.S.F. application rate.)										
				744.58	*210.93*	*3,368.25*	*0.00*	*4,323.75*	*4,929.99*	*6,183.34*
USR RESTOR-03 Tree and shrub planting	6.00	ACR	Landscape Subcontractor	4,467	1,266	20,210	0	25,943	29,580	37,100
(Note: Assumes tree and shrub density of 25 trees per acre. Planting trees of 1-1/2" to 2" caliper. Species including ash, maple, oak, redbud, and walnut. Planting shrubs of 5 gallon caliper. Species including hibiscus, forsythia, burning bush, and hydrangea.)										
15 TRWD	**1.00**	**LS**	**Isolation Gate General Contractor - Clear Fork and TRWD**	**1,881,816**	**382,690**	**1,656,525**	**4,135,720**	**8,056,751**	**9,039,627**	**11,337,781**
Mobilization and Demobilization	**1.00**	**LS**		**7,988**	**9,298**	**0**	**0**	**17,286**	**18,526**	**23,236**
				141.82	*263.18*	*0.00*	*0.00*	*404.99*	*461.78*	*579.18*
USR MOBIL-01 Moblization and Demobilization of Heavy Equipment	20.00	EA	Hauling Subcontractor	2,836	5,264	0	0	8,100	9,236	11,584
				141.82	*228.79*	*0.00*	*0.00*	*370.60*	*422.57*	*530.00*
USR MOBIL-02 Mobilization and Demobilization of Medium Equipment	2.00	EA	Hauling Subcontractor	284	458	0	0	741	845	1,060
				2,433.94	*1,788.64*	*0.00*	*0.00*	*4,222.57*	*4,222.57*	*5,296.08*
RSM 024559000200 Mobilization, 75 ton, set up and remove crane, with pile leads and pile hammer	2.00	EA	Isolation Gate General Contractor - Clear Fork and TRWD	4,868	3,577	0	0	8,445	8,445	10,592
Site Preparation	**1.00**	**LS**	**Isolation Gate General Contractor - Clear Fork and**	**54,480**	**62,106**	**27,795**	**0**	**144,381**	**150,928**	**189,298**

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
			TRWD							
				15.00	*10.00*	*15.00*	*0.00*	*40.00*	*40.00*	*50.17*
USR HAUL-04 Access Roads	1,500.00	LF	Isolation Gate General Contractor - Clear Fork and TRWD	22,500	15,000	22,500	0	60,000	60,000	75,254
(Note: Per Estimator. Cost based on professional judgment.)										
USR DEMO-12 Demolish concrete structure	1.00	LS	Demolition Subcontractor	20,000	15,000	5,000	0	40,000	45,608	57,203
(Note: Allowance per Estimator. Cost based on professional judgment.)										
				0.15	*1.13*	*0.00*	*0.00*	*1.28*	*1.28*	*1.60*
USR STPREP-BY01 Scraper w/Operator, strip soil - Gate Structures	5,808.00	LCY	Isolation Gate General Contractor - Clear Fork and TRWD	860	6,553	0	0	7,414	7,414	9,298
				0.10	*0.29*	*0.00*	*0.00*	*0.39*	*0.39*	*0.49*
USR STPREP-BY02 Dozer w/Operator, clear, grub and stack - Gate Structures	5,808.00	LCY	Isolation Gate General Contractor - Clear Fork and TRWD	568	1,701	0	0	2,269	2,269	2,846
				1.32	*3.42*	*0.00*	*0.00*	*4.74*	*4.74*	*5.95*
USR SITEPREP-01 Screening and Stockpiling of Cleared and Grubbed Material	5,808.00	LCY	Isolation Gate General Contractor - Clear Fork and TRWD	7,672	19,885	0	0	27,557	27,557	34,562
(Note: Screening of stripped soil. Assumes wheel loader w/operator, screening plant, and laborer.)										
				0.95	*1.36*	*0.00*	*0.00*	*2.30*	*2.63*	*3.30*
USR HWYHAUL-12 Highway Haul, 17 CY End Dump, Removal of Screened Material	2,904.00	LCY	Hauling Subcontractor	2,749	3,945	0	0	6,694	7,632	9,572
(Note: Assumes 1/2 of screened material will be hauled off-site for disposal at the city landfill. Remaining material will be left on-site and used for site restoration.)										
				0.19	*0.00*	*0.34*	*0.00*	*0.53*	*0.53*	*0.67*
USR 023707001100 Erosion control, silt fence, polypropylene, adverse conditions, 3' high	500.00	LF	Isolation Gate General Contractor - Clear Fork and TRWD	96	0	170	0	266	266	334
				0.32	*0.22*	*2.25*	*0.00*	*2.79*	*2.79*	*3.50*
USR 023707001250 Erosion control, hay bales, staked	20.00	LF	Isolation Gate General Contractor - Clear Fork and TRWD	6	4	45	0	56	56	70
				0.72	*0.44*	*2.00*	*0.00*	*3.16*	*3.16*	*3.96*
USR EROSION-01 Straw Wattles	40.00	LF	Isolation Gate General Contractor -	29	18	80	0	126	126	159

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
			Clear Fork and TRWD							
(Note: Cost per Estimator.)										
Excavation, Hauling, and Placement	**1.00**	**LS**	**Isolation Gate General Contractor - Clear Fork and TRWD**	**165,001**	**237,229**	**538,361**	**0**	**940,591**	**940,591**	**1,179,718**
				2.64	*2.60*	*9.35*	*0.00*	*14.59*	*14.59*	*18.30*
USR CFFRDAM-01 Coffer Dam, Sheet Piling, Steel, 38 psf, 25' Excavation, Drive, Extract, and Salvage - 2 each at 520 LF long by 35 LF, removed at completion	36,400.00	SF	Isolation Gate General Contractor - Clear Fork and TRWD	96,125	94,539	340,340	0	531,004	531,004	666,002
(Note: Cost and productivity based on RS MEANS 2008 Costworks Item 31 41 1610 1900.)										
				49.50	*352.16*	*40.00*	*0.00*	*441.66*	*441.66*	*553.94*
USR CARE-01 Care of water - pumps	122.00	DAY	Isolation Gate General Contractor - Clear Fork and TRWD	6,039	42,963	4,880	0	53,882	53,882	67,581
(Note: 2 pumps operating for 56 days each. Assumes the 2 pumps discharge to 1 common settling basin and outfall. Skid mounted 6" centrifugal pump, 100' of hose (5 sections). Allowance per estimator to cover miscellaneous materials.)										
				49.55	*352.16*	*20.00*	*0.00*	*421.70*	*421.70*	*528.91*
USR CARE-02 Care of water - settling basin	56.00	DAY	Isolation Gate General Contractor - Clear Fork and TRWD	2,775	19,721	1,120	0	23,615	23,615	29,619
(Note: Skid mounted 6" centrifugal pump, 100' of hose (5 sections). Crew and equipment to check on settling basin daily. Allowance per estimator to cover miscellaneous materials.)										
				63.66	*15.51*	*50.00*	*0.00*	*129.17*	*129.17*	*162.01*
USR CARE-03 Care of water - discharge piping	56.00	DAY	Isolation Gate General Contractor - Clear Fork and TRWD	3,565	868	2,800	0	7,233	7,233	9,072
(Note: Crew and equipment to check on discharge piping daily. Allowance per estimator to cover miscellaneous materials.)										
				57.34	*15.51*	*20.00*	*0.00*	*92.85*	*92.85*	*116.45*
USR CARE-04 Care of water - outfall	56.00	DAY	Isolation Gate General Contractor - Clear Fork and TRWD	3,211	868	1,120	0	5,200	5,200	6,521
(Note: Crew and equipment to check on outfall daily. Allowance per estimator to cover miscellaneous materials.)										
				4.94	*1.77*	*16.30*	*0.00*	*23.01*	*23.01*	*28.86*
RSM 022405001700 Dewatering, sump hole construction, pit with gravel collar, corrugated, 12"	240.00	LF	Isolation Gate General Contractor - Clear Fork and	1,184	425	3,912	0	5,522	5,522	6,926

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
gravel collar, 12" corr. pipe, 16 ga, includes excavation and gravel pit			TRWD							
USR DRAIN-04 Sub drain system - small	1.00	LS	Isolation Gate General Contractor - Clear Fork and TRWD	15,000	0	10,000	0	25,000	25,000	31,356
(Note: Allowance per Estimator. Cost based on professional judgment.)										
				2.86	*2.56*	*37.00*	*0.00*	*42.42*	*42.42*	*53.21*
RSM 024556001300 Piles, steel, "H" sections, 50' long, HP14 X 102, excludes mobilization or demobilization	2,676.00	VLF	Isolation Gate General Contractor - Clear Fork and TRWD	7,663	6,846	99,012	0	113,521	113,521	142,382
				0.13	*0.34*	*0.00*	*0.00*	*0.47*	*0.47*	*0.60*
USR EXCAV-BY02 Hyd Excavator, 3 CY - TRWD Gate	37,014.00	BCY	Isolation Gate General Contractor - Clear Fork and TRWD	4,943	12,622	0	0	17,566	17,566	22,031
				0.25	*0.88*	*0.00*	*0.00*	*1.13*	*1.13*	*1.42*
USR OFFRDHAUL-GS02 6x6 Articulated Off-Road Truck, 24 CY, TRWD Gate	44,417.00	LCY	Isolation Gate General Contractor - Clear Fork and TRWD	11,123	39,138	0	0	50,260	50,260	63,038
(Note: Productivity based on estimated average haul distance, number of excavators and dump trucks used.)										
				0.07	*0.26*	*0.00*	*0.00*	*0.33*	*0.33*	*0.42*
USR SPRDFL-GS02 Backfill, 6" lifts, dozer - TRWD Gate	44,417.00	LCY	Isolation Gate General Contractor - Clear Fork and TRWD	3,096	11,741	0	0	14,837	14,837	18,610
				0.08	*0.14*	*0.00*	*0.00*	*0.23*	*0.23*	*0.28*
USR COMP-GS01 Compaction, riding vibrating roller, pad foot, single drum, 84" wide, 6" lifts, 5 passes -TRWD Gate	39,975.00	ECY	Isolation Gate General Contractor - Clear Fork and TRWD	3,324	5,727	0	0	9,051	9,051	11,352
				1.77	*0.00*	*2.61*	*0.00*	*4.38*	*4.38*	*5.50*
USR EMBNKSPRD-02 Geotextile Subsurface Drainage Filtration, fabric ply bonded to 3-dimensional nylon mat, ideal conditions, 0.4" thick	3,334.00	SY	Isolation Gate General Contractor - Clear Fork and TRWD	5,906	0	8,702	0	14,608	14,608	18,322
(Note: Material cost for RS MEANS CostWorks 2008 item number 33 46 2610 0170.)										
				0.61	*0.87*	*50.56*	*0.00*	*52.03*	*52.03*	*65.26*
USR HWYHAUL-19 Highway Haul, 17 CY End Dump, Import	1,001.00	LCY	Isolation Gate General Contractor -	606	870	50,611	0	52,086	52,086	65,328

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
Material - embankment road, 1.5" rock			Clear Fork and TRWD							
(Note: Material cost for RS MEANS CostWorks 2008 item number32 11 2323 1521. Assumes 40 minute round trip haul time.)										
				0.07	*0.37*	*0.00*	*0.00*	*0.44*	*0.44*	*0.55*
USR EMBNKSPRD-01 Spread embankment road material, dozer - 1.5" rock	1,001.00	LCY	Isolation Gate General Contractor - Clear Fork and TRWD	70	369	0	0	439	439	551
				0.12	*0.10*	*0.00*	*0.00*	*0.22*	*0.22*	*0.27*
USR EMBNKCMP-01 Compaction, riding vibrating roller, smooth drum, 48" wide, 6" lifts, 5 passes - embankment road - 1.5" rock	901.00	ECY	Isolation Gate General Contractor - Clear Fork and TRWD	109	88	0	0	196	196	246
				0.61	*0.87*	*47.50*	*0.00*	*48.97*	*48.97*	*61.43*
USR HWYHAUL-20 Highway Haul, 17 CY End Dump, Import Material - embankment road, 3/4" rock	334.00	LCY	Isolation Gate General Contractor - Clear Fork and TRWD	202	290	15,865	0	16,357	16,357	20,516
(Note: Material cost for RS MEANS CostWorks 2008 item number 31 05 1610 0320. Assumes 40 minute round trip haul time.)										
				0.07	*0.37*	*0.00*	*0.00*	*0.44*	*0.44*	*0.55*
USR EMBNKSPRD-01 Spread embankment road material, dozer - 3/4" rock	334.00	LCY	Isolation Gate General Contractor - Clear Fork and TRWD	23	123	0	0	146	146	184
				0.12	*0.10*	*0.00*	*0.00*	*0.22*	*0.22*	*0.27*
USR EMBNKCMP-01 Compaction, riding vibrating roller, smooth drum, 48" wide, 6" lifts, 5 passes - embankment road - 3/4" rock	301.00	ECY	Isolation Gate General Contractor - Clear Fork and TRWD	36	29	0	0	66	66	82
Pavement, Sidewalks, Curbs and Gutter	**1.00**	**LS**	**Concrete Subcontractor**	**125**	**163**	**7,920**	**0**	**8,208**	**9,358**	**11,737**
				1.73	*2.26*	*110.00*	*0.00*	*113.99*	*129.98*	*163.02*
USR 027503000300 Plain cement concrete pavement, fixed form, unreinforced, 12' pass, 10" thick, includes joints, finishing, and curing	72.00	SY	Concrete Subcontractor	125	163	7,920	0	8,208	9,358	11,737
(Note: Material cost per Estimator.)										
Training Walls	**1.00**	**LS**	**Concrete Subcontractor**	**1,645,400**	**70,440**	**1,046,743**	**0**	**2,762,583**	**3,149,924**	**3,950,733**
				175.00	*20.00*	*105.00*	*0.00*	*300.00*	*342.06*	*429.03*
USR CONC-08 Concrete	2,312.00	CY	Concrete	404,600	46,240	242,760	0	693,600	790,850	991,908

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
footing/slab on grade			Subcontractor							
(Note: Per Estimator. Cost based on previous work of similar scope. Assumes concrete pumping.)										
				225.00	*20.00*	*130.00*	*0.00*	*375.00*	*427.58*	*536.28*
USR CONC-03 Concrete walls	1,039.00	CY	Concrete Subcontractor	233,775	20,780	135,070	0	389,625	444,254	557,198
(Note: Per Estimator. Cost based on previous work of similar scope. Assumes concrete pumping.)										
				275.00	*20.00*	*140.00*	*0.00*	*435.00*	*495.99*	*622.09*
USR CONC-04 Concrete elevated slabs	171.00	CY	Concrete Subcontractor	47,025	3,420	23,940	0	74,385	84,815	106,377
(Note: Per Estimator. Cost based on previous work of similar scope. Assumes concrete pumping.)										
				0.00	*0.00*	*0.55*	*0.00*	*0.55*	*0.63*	*0.79*
USR CONC-05 Reinforcing bar - 175 lbs/cy	299,950.00	LB	Concrete Subcontractor	0	0	164,973	0	164,973	188,103	235,925
(Note: Per Estimator.)										
				30.00	*0.00*	*15.00*	*0.00*	*45.00*	*51.31*	*64.35*
USR CONC-14 Levee tie-in retaining walls, concrete 3' thick	32,000.00	SF	Concrete Subcontractor	960,000	0	480,000	0	1,440,000	1,641,902	2,059,325
(Note: Per Estimator. Cost based on previous work of similar scope. Assumes concrete pumping.)										
Mechanical	**1.00**	**LS**	**Mechanical Subcontractor**	**2,384**	**163**	**11,134**	**0**	**13,681**	**15,599**	**19,565**
				2.04	*0.14*	*19.00*	*0.00*	*21.18*	*24.15*	*30.28*
USR 055303000136 Floor grating, aluminum, 1-3/4" x 3/16" bearing bars @ 1-3/16" O.C., cross bars @ 4" O.C., up to 300 S.F., field fabricated from panels	120.00	SF	Mechanical Subcontractor	244	17	2,280	0	2,541	2,897	3,634
				2.04	*0.14*	*7.18*	*0.00*	*9.36*	*10.67*	*13.38*
USR METAL-01 Aluminum grating frame	100.00	LF	Mechanical Subcontractor	204	14	718	0	936	1,067	1,338
(Note: Per Estimator.)										
				6.36	*0.44*	*23.50*	*0.00*	*30.30*	*34.55*	*43.33*
RSM 055207000080 Railing, pipe, aluminum, satin finish, 2 rails, 1-1/2" dia, shop fabricated	15.00	LF	Mechanical Subcontractor	95	7	353	0	454	518	650
				11.97	*0.83*	*31.50*	*0.00*	*44.30*	*50.51*	*63.35*
RSM 055145000100 Ladder, shop fabricated, steel, 20" W, bolted to concrete, excl cage	99.00	VLF	Mechanical Subcontractor	1,185	82	3,119	0	4,386	5,001	6,272
				127.20	*8.79*	*1,200.00*	*0.00*	*1,336.00*	*1,523.32*	*1,910.59*
USR METAL-02 Aluminum floor access hatch - 4' x 4'	1.00	EA	Mechanical Subcontractor	127	9	1,200	0	1,336	1,523	1,911
(Note: Material cost per Estimator.)										
				127.20	*8.79*	*760.00*	*0.00*	*896.00*	*1,021.63*	*1,281.35*

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
USR METAL-02 Aluminum floor access hatch - 3' x 3'	4.00	EA	Mechanical Subcontractor	509	35	3,040	0	3,584	4,087	5,125
(Note: Material cost per Estimator.)										
				19.25	*0.00*	*425.00*	*0.00*	*444.25*	*506.54*	*635.32*
HNC 081102000900 Doors, commercial, steel, flush, full panel, hollow core, 18 ga., 3'-4" x 7'-0" x 2" thick	1.00	EA	Mechanical Subcontractor	19	0	425	0	444	507	635
Finishes	**1.00**	**LS**	**Building Subcontractor**	**0**	**0**	**0**	**1,110,000**	**1,110,000**	**1,265,633**	**1,587,396**
USR FINISHES-03 Painting and coating - flood control and diversion structure	1.00	LS	Building Subcontractor	0	0	0	110,000	110,000	125,423	157,310
(Note: Allowance per Estimator. Cost based on professional judgment.)										
USR FINISHES-04 Architectural enhancement	1.00	LS	Building Subcontractor	0	0	0	1,000,000	1,000,000	1,140,210	1,430,087
(Note: Allowance per Estimator. Cost based on professional judgment.)										
Flood Control Structures	**1.00**	**LS**	**Gate Control Structures Subcontractor**	**178**	**115**	**0**	**2,830,720**	**2,831,012**	**3,227,949**	**4,048,593**
				0.00	*0.00*	*0.00*	*1,700,000.00*	*1,700,000.00*	*1,938,357.00*	*2,431,147.44*
USR EQUIP-04 Gate - 24' x 17' with motor and drum hoist	1.00	EA	Gate Control Structures Subcontractor	0	0	0	1,700,000	1,700,000	1,938,357	2,431,147
(Note: Vendor quote - General Electric Hydro - 21 May 2004. Cost includes design, contingency, delivery to the site and installation.)										
				0.00	*0.00*	*0.00*	*750,000.00*	*750,000.00*	*855,157.50*	*1,072,565.05*
USR EQUIP-05 Gate - 12' x 10' with motor and drum hoist	1.00	EA	Gate Control Structures Subcontractor	0	0	0	750,000	750,000	855,158	1,072,565
(Note: Vendor quote - General Electric Hydro - 21 May 2004. Cost includes design, contingency, delivery to the site and installation.)										
				0.00	*0.00*	*0.00*	*273,000.00*	*273,000.00*	*311,277.33*	*390,413.68*
USR EQUIP-06 Stop log - 24' x 17'	1.00	EA	Gate Control Structures Subcontractor	0	0	0	273,000	273,000	311,277	390,414
(Note: Vendor quote - General Electric Hydro - 21 May 2004. Cost includes design, contingency, delivery to the site and installation.)										
				0.00	*0.00*	*0.00*	*85,000.00*	*85,000.00*	*96,917.85*	*121,557.37*
USR EQUIP-07 Stop log - 12' x 10'	1.00	EA	Gate Control Structures Subcontractor	0	0	0	85,000	85,000	96,918	121,557
(Note: Vendor quote - General Electric Hydro - 21 May 2004. Cost includes design, contingency, delivery to the site and installation.)										
				1.11	*0.72*	*0.00*	*142.00*	*143.83*	*163.99*	*205.69*
USR EQUIP-08 Motor housing, prefabricated building	160.00	SF	Building Subcontractor	178	115	0	22,720	23,012	26,239	32,910
(Note: Cost and productivity based on RS MEANS 2008 Costworks Item 13 34 2310 0400.)										

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
Electrical, Controls, and Instrumentation	**1.00**	**LS**	**Electrical Subcontractor**	**15**	**0**	**37**	**195,000**	**195,052**	**222,400**	**278,941**
USR ELEC-10 Barrier warning system - isolation gate	1.00	LS	Electrical Subcontractor	0	0	0	25,000	25,000	28,505	35,752
(Note: Allowance per Estimator. Cost based on professional judgment.)										
USR ELEC-11 Electric lights site - isolation gate	1.00	LS	Electrical Subcontractor	0	0	0	20,000	20,000	22,804	28,602
(Note: Allowance per Estimator. Cost based on professional judgment.)										
USR ELEC-09 Transformer - isolation gate	1.00	LS	Electrical Subcontractor	0	0	0	10,000	10,000	11,402	14,301
(Note: Allowance per Estimator. Cost based on professional judgment.)										
				0.00	*0.00*	*0.00*	*8.00*	*8.00*	*9.12*	*11.44*
USR ELEC-13 Underground primary service	2,500.00	LF	Electrical Subcontractor	0	0	0	20,000	20,000	22,804	28,602
(Note: Allowance per Estimator. Cost based on professional judgment.)										
				0.61	*0.00*	*1.46*	*0.00*	*2.07*	*2.36*	*2.96*
RSM 020806000400 Underground marking tape, vinyl, aluminum foil core, detectable, 2"	25.00	CLF	Electrical Subcontractor	15	0	37	0	52	59	74
USR ELEC-14 Control building electrical - isolation gate	1.00	LS	Electrical Subcontractor	0	0	0	75,000	75,000	85,516	107,257
(Note: Allowance per Estimator. Cost based on professional judgment.)										
USR ELEC-15 Security electrical - isolation gate	1.00	LS	Electrical Subcontractor	0	0	0	25,000	25,000	28,505	35,752
(Note: Allowance per Estimator. Cost based on professional judgment.)										
USR ELEC-12 Instrumentation - isolation gate	1.00	LS	Electrical Subcontractor	0	0	0	20,000	20,000	22,804	28,602
(Note: Allowance per Estimator. Cost based on professional judgment.)										
Site Restoration	**1.00**	**LS**	**Landscape Subcontractor**	**6,246**	**3,177**	**24,536**	**0**	**33,958**	**38,719**	**48,563**
				6.80	*7.31*	*16.55*	*0.00*	*30.66*	*34.96*	*43.85*
USR REST-01 Seeding, bermuda grass, chewing with mulch and fertilizer, 3 lb. per M.S.F., tractor spreader	261.40	MSF	Landscape Subcontractor	1,778	1,911	4,326	0	8,015	9,139	11,463
(Note: Material cost based on vendor quote per pound and 3 lb. per M.S.F. application rate.)										
				744.58	*210.93*	*3,368.25*	*0.00*	*4,323.75*	*4,929.99*	*6,183.34*
USR RESTOR-03 Tree and shrub planting	6.00	ACR	Landscape Subcontractor	4,467	1,266	20,210	0	25,943	29,580	37,100
(Note: Assumes tree and shrub density of 25 trees per acre. Planting trees of 1-1/2" to 2" caliper. Species including ash, maple, oak, redbud, and walnut. Planting shrubs of 5 gallon caliper. Species including hibiscus, forsythia, burning bush, and hydrangea.)										
18 Cultural Resource Preservation	**1.00**	**LS**		**0**	**0**	**0**	**1,020,000**	**1,020,000**	**0**	**1,020,000**
(Note: These costs were determined by USACE in accordance with the requirements contained in the Programmatic Agreement between the USACE and Texas Historical Commission.)										

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
USR 18-01 Cultural Resources Preservation	1.00	LS		0	0	0	1,020,000	1,020,000	0	1,020,000
(Note: Allowance per COE.)										
30 Planning, Engineering, and Design	**1.00**	**LS**		**0**	**0**	**0**	**11,345,131**	**11,345,131**	**0**	**11,345,131**
(Note: This category includes anticipated costs for design and permitting including but not limited to development of planning, engineering and design, independent technical review (ITR), cost estimation, value engineering (VE), contract bid packages, engineering services during construction, planning during construction, environmental permitting, and permit fees. The costs are divided into three main tasks: 1) A/E Design Fees; 2) Permits, Fees, and Licenses; 3) Survey and Testing; and 4) Legal Costs. Costs under this category are based on a percentage of the total construction cost with contingency. Based on the complexity, magnitude, and duration of the project the costs have been assumed as approximately 5.0% for A/E Design Fees and 1.7% for Permits, Fees and Licenses for a total of 6.7% for this category.)										
USR FED220-30-01 A/E design services	1.00	LS		0	0	0	6,801,001	6,801,001	0	6,801,001
(Note: Based on the complexity, magnitude, and duration of the project the costs have been assumed as approximately 5% for this category.)										
USR FED220-30-02 Permitting	1.00	LS		0	0	0	2,315,622	2,315,622	0	2,315,622
(Note: Based on the complexity, magnitude, and duration of the project the costs have been assumed as approximately 1.7% for this category.)										
USR FED220-22-01 Survey and Testing	1.00	LS		0	0	0	1,259,107	1,259,107	0	1,259,107
(Note: Based on the complexity, magnitude, and duration of the project the costs have been assumed as approximately 1.3% for this category.)										
USR FED220-22-02 Legal costs	1.00	LS		0	0	0	969,401	969,401	0	969,401
(Note: Based on the complexity, magnitude, and duration of the project the costs have been assumed as approximately 1% for this category.)										
31 Construction Management	**1.00**	**LS**		**0**	**0**	**0**	**6,077,749**	**6,077,749**	**0**	**6,077,749**
(Note: Construction management includes, but is not limited to, costs for: meetings (pre-construction, progress, post-con), field coordination, inspection, survey control, contract modifications, payment request processing. Costs under this category are based on a percentage of the total construction cost with contingency. Based on the complexity, magnitude, and duration of the project the costs have been assumed as approximately 4.6% for this category.)										
USR FED220-31-02 Construction management and testing	1.00	LS		0	0	0	6,077,749	6,077,749	0	6,077,749
(Note: Based on the complexity, magnitude, and duration of the project the costs have been assumed as approximately 4.6% for this category.)										
02 Non-Federal	**1.00**	**LS**	**General Contractor**	**19,920,079**	**10,867,688**	**24,372,638**	**222,401,216**	**277,561,620**	**153,573,434**	**325,012,097**
(Note: The non-federal sponsor is the Tarrant Regional Water District (TRWD) and the City of Fort Worth is one of the local partners. These entities are also sponsors for the Riverside Oxbow Ecosystem Restoration Project.)										
01 Lands and Damages	**1.00**	**LS**		**0**	**0**	**0**	**53,111,628**	**53,111,628**	**0**	**53,111,628**
(Note: This category includes costs associated with the acquisition of property for the project. The costs were tabulated by the major work element for which it will be acquired and property acquisition assistance costs. The four (4) major work elements are: bypass channel, water feature, valley storage (Riverside/Gateway and Marine Creek. The costs associated with each element of work were determined after review of the mass appraisals performed by James K. Norwood, Certified Real Estate Appraiser. Appraisals were performed on the Central City Project on behalf of the Tarrant Regional Water District and at the Riverside Oxbow/Gateway on behalf of the USACE. Estimated costs in this estimate are based on the best known information at the time of the estimate and may vary from the amounts in the Norwood appraisals given modifications in the project footprint. Costs were normalized to the baseline 2007 by factors provided by the Real Estate Division USACE Fort Worth District. A factor of 6% per year was used for land values and a 15% flat rate was used for administrative fees. Property acquisition assistance costs are included for consulting fees, legal assistance, and other permitting, subordinated fees, licenses that will be incurred as part of the land acquisition activity. These costs are for additional analysis, planning, acquisition documents and proceedings including any additional appraisals and possible condemnation proceedings. Base cost for these assistance cost was estimated at 13% of the Property Acquisition Cost and allocated at 5.2% Consulting, 5.2% Legal, and 2.6% Permitting & Licensing. A contingency was not been provided on these costs as they are considered separate consulting costs. Landowner relocation costs were provided by a separate independent relocation study. This category includes anticipated costs for the relocation and moving of current property owners and tenants on the affected property. Costs for relocations of persons and businesses under this section are based on the report prepared by Pinnacle Consulting Management Group, Inc dated February 2, 2005. Costs were adjusted to baseline 2007 cost utilizing factors provided by Pinnacle Group of 4% compounded annually. A uniform contingency of 10% was included on the Landowner Relocation costs to account for market fluctuations.)										
05 Property Acquistion	**1.00**	**LS**		**0**	**0**	**0**	**7,239,991**	**7,239,991**	**0**	**7,239,991**

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
Assistance										
USR 01-05 Consulting Fee	1.00	LS		0	0	0	2,906,397	2,906,397	0	2,906,397
(Note: Per Estimator)										
USR 01-06 Legal Assistance	1.00	LS		0	0	0	2,889,063	2,889,063	0	2,889,063
(Note: Per Estimator)										
USR 01-07 Permitting, Fees, and Licenses	1.00	LS		0	0	0	1,444,531	1,444,531	0	1,444,531
(Note: Per Estimator)										
10 Property Acquisition	**1.00**	**LS**		**0**	**0**	**0**	**28,406,743**	**28,406,743**	**0**	**28,406,743**
USR 01-01 By-Pass Channel Land Acquisition Costs	1.00	LS		0	0	0	27,395,503	27,395,503	0	27,395,503
(Note: Includes By-Pass Channel Roadway and White Settlement Roadway. Provided by TRWD)										
USR 01-02 Water Feature Land Acquisition Costs	1.00	LS		0	0	0	561,800	561,800	0	561,800
(Note: Provided by TRWD)										
USR 01-03 Riverside Gateway Land Acquisition Costs	1.00	LS		0	0	0	0	0	0	0
(Note: Provided by TRWD)										
USR 01-04 Marine Creek Land Acquisition Costs	1.00	LS		0	0	0	449,440	449,440	0	449,440
(Note: Provided by TRWD)										
15 Property Relocations	**1.00**	**LS**		**0**	**0**	**0**	**17,464,894**	**17,464,894**	**0**	**17,464,894**
USR 01-08 Relocation Costs	1.00	LS		0	0	0	17,464,894	17,464,894	0	17,464,894
(Note: Assumes an escalation of 4% per year from 2005 relocation costs.)										
02 Relocations	**1.00**	**LS**	**General Contractor**	**3,797,446**	**5,280,826**	**2,103,693**	**10,553,410**	**21,735,374**	**21,735,374**	**30,177,032**
(Note: Utility relocations are required for the construction of the project. A variety of utility lines including sewers, storm sewers, water mains, gas mains, electrical and cable will need to be relocated and/or demolished. Existing utilities were contacted, maps obtained and impacted utilities identified. City and franchise utility owners were contacted regarding location and costs for major relocations. Cost for the relocation of the 138 kilovolt (kV) transmission line provided by TXU Electric. Construction Costs for these items have been included in this section. A contingency of 20% was included on these costs. This section also includes the demolition of structures and paving in the bypass channel and the water feature areas. Approximately 1,583,575 square feet of light industrial buildings will be demolished. The average building height was assumed to be 20 feet tall with 7.5% of building volume requiring disposal. Concrete paving was assumed to be 8-inch thick with approximately 48,780 square yards required for removal. Asphalt paving was assumed to be 6-inch thick with approximately 127,800 square yards of material removal. It is the intent of the local sponsors to develop a recycling and reuse plan to reduce landfill waste. Concrete debris may be used as armor in non-visible areas or crushed and used as fill during site construction. Demolition debris that cannot be recycled or reused beneficially will be hauled to the City of Fort Worth construction debris landfill on Bennen Avenue or the TRWD disposal area. There will be no disposal fees associated with construction debris disposed at either facility.)										
05 Mobilization and Demobilization	**1.00**	**LS**	**Bypass Channel and Levees General Contractor**	**3,534**	**4,623**	**0**	**0**	**8,157**	**8,157**	**10,230**
				141.82	*263.18*	*0.00*	*0.00*	*404.99*	*404.99*	*507.96*
USR MOBIL-01 Moblization and Demobilization of Heavy Equipment	10.00	EA	Bypass Channel and Levees General Contractor	1,418	2,632	0	0	4,050	4,050	5,080
				141.82	*228.79*	*0.00*	*0.00*	*370.60*	*370.60*	*464.82*
USR MOBIL-02 Mobilization and	8.00	EA	Bypass Channel	1,135	1,830	0	0	2,965	2,965	3,719

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
Demobilization of Medium Equipment			and Levees General Contractor							
				245.26	*40.24*	*0.00*	*0.00*	*285.50*	*285.50*	*358.08*
USR MOBIL-03 Mobilization and Demobilization of Large Self-Propelled Equipment	4.00	EA	Bypass Channel and Levees General Contractor	981	161	0	0	1,142	1,142	1,432
10 General Demolition and Site Preparation	**1.00**	**LS**	**General Contractor**	**2,451,807**	**4,447,424**	**51,100**	**0**	**6,950,331**	**6,950,331**	**9,650,074**
				0.48	*0.18*	*0.00*	*0.00*	*0.66*	*0.66*	*0.92*
USR DEMO-04 Demolition, handling, and disposal of mesh reinforced concrete to 6" thick	1,150,200.00	SF	General Contractor	553,470	204,564	0	0	758,034	758,034	1,052,480
(Note: Based on 022202505800, 023154904200, 022203300100. Assumes 0.0188 cubic yards of debris per square foot of concrete. Assumes 2 tons per cubic yard.)										
				29.19	*30.98*	*0.00*	*0.00*	*60.17*	*60.17*	*83.55*
USR DEMO-01 Demolition, handling, and disposal of reinforced concrete, 7" to 24" thick	10,850.00	CY	General Contractor	316,715	336,174	0	0	652,889	652,889	906,494
(Note: Based on 022202505500, 023154904200, 022203300100. Assumes 2 tons per cubic yard.)										
				0.04	*0.12*	*0.00*	*0.00*	*0.16*	*0.16*	*0.23*
USR DEMO-02 Demolition, handling, and disposal of building debris	31,671,500.00	CF	General Contractor	1,381,071	3,756,643	0	0	5,137,714	5,137,714	7,133,375
(Note: Based on 022201108010, 023154904200, 022203300100. Assumes 0.002875 cubic yards of debris per cubic foot of building. Assumes 2 tons per cubic yard.)										
USR DEMO-13 Miscellaneous demolition for site piping and unforeseen conditions.	1.00	LS	General Contractor	200,000	150,000	50,000	0	400,000	400,000	555,373
(Note: Allowance per Estimator. Cost based on professional judgment.)										
				0.19	*0.00*	*0.34*	*0.00*	*0.53*	*0.53*	*0.74*
USR 023707001100 Erosion control, silt fence, polypropylene, adverse conditions, 3' high	2,500.00	LF	General Contractor	480	0	850	0	1,330	1,330	1,846
				0.32	*0.22*	*2.25*	*0.00*	*2.79*	*2.79*	*3.87*
USR 023707001250 Erosion control, hay bales, staked	40.00	LF	General Contractor	13	9	90	0	112	112	155
				0.72	*0.44*	*2.00*	*0.00*	*3.16*	*3.16*	*4.39*
USR EROSION-01 Straw Wattles	80.00	LF	General Contractor	58	35	160	0	253	253	351
(Note: Cost per Estimator.)										
15 Utility Relocation - Sanitary Sewer, Potable Water, Storm Sewer and Natural Gas	**1.00**	**LS**	**General Contractor**	**650,209**	**634,611**	**1,307,528**	**4,264,230**	**6,856,579**	**6,856,579**	**9,519,905**
Sanitary Sewer	**1.00**	**LS**	**General Contractor**	**216,087**	**227,976**	**157,985**	**3,303,840**	**3,905,888**	**3,905,888**	**5,423,067**

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
Site Work	**1.00**	**LS**	**General Contractor**	**131,796**	**197,992**	**50,000**	**0**	**379,787**	**379,787**	**527,310**
				3.44	*7.26*	*0.00*	*0.00*	*10.70*	*10.70*	*14.85*
USR DEMO-18 Demolition, handling, and disposal of 6" to 10" diameter pipe	5,390.00	LF	General Contractor	18,522	39,146	0	0	57,668	57,668	80,068
(Note: Based on USR-DEMO-15, 023154904200, 022203300100. Assumes 0.013 cubic yards of debris per linear foot of pipe. Assumes 2 tons per cubic yard.)										
				4.62	*9.77*	*0.00*	*0.00*	*14.39*	*14.39*	*19.98*
USR DEMO-19 Demolition, handling, and disposal of 12" to 18" diameter pipe	1,190.00	LF	General Contractor	5,499	11,624	0	0	17,123	17,123	23,775
(Note: Based on USR-DEMO-16, 023154904200, 022203300100. Assumes 0.045 cubic yards of debris per linear foot of pipe. Assumes 2 tons per cubic yard.)										
				7.09	*15.00*	*0.00*	*0.00*	*22.10*	*22.10*	*30.68*
USR DEMO-20 Demolition, handling, and disposal of 20" to 36" diameter pipe	2,080.00	LF	General Contractor	14,755	31,207	0	0	45,963	45,963	63,816
(Note: Based on USR-DEMO-17, 023154904200, 022203300100. Assumes 0.182 cubic yards of debris per linear foot of pipe. Assumes 2 tons per cubic yard.)										
				14.39	*30.44*	*0.00*	*0.00*	*44.83*	*44.83*	*62.24*
USR DEMO-21 Demolition, handling, and disposal of 42" and greater diameter pipe	2,990.00	LF	General Contractor	43,019	91,014	0	0	134,033	134,033	186,096
(Note: Based on USR-DEMO-18, 023154904200, 022203300100. Assumes 0.505 cubic yards of debris per linear foot of pipe. Assumes 2 tons per cubic yard.)										
				5,000.00	*2,500.00*	*5,000.00*	*0.00*	*12,500.00*	*12,500.00*	*17,355.42*
USR DEMO-19 Cut and plug pipe	10.00	EA	General Contractor	50,000	25,000	50,000	0	125,000	125,000	173,554
(Note: Per Estimator.)										
Piping and Appurtenances	**1.00**	**LS**	**General Contractor**	**84,291**	**29,985**	**107,985**	**3,303,840**	**3,526,101**	**3,526,101**	**4,895,757**
				265.97	*92.41*	*1,075.00*	*0.00*	*1,433.38*	*1,433.38*	*1,990.15*
RSM 026304001130 Manholes, concrete, precast, 4' I.D., 8' deep, excludes base, excavation, backfill, frame and cover	19.00	EA	General Contractor	5,053	1,756	20,425	0	27,234	27,234	37,813
				33.25	*11.55*	*150.00*	*0.00*	*194.80*	*194.80*	*270.46*
RSM 026304001140 Manholes, concrete, precast, 4' I.D., excludes base, excavation, backfill, frame and cover, add for depths over 8'	228.00	VLF	General Contractor	7,580	2,634	34,200	0	44,414	44,414	61,666
				43.18	*15.51*	*173.00*	*0.00*	*231.69*	*231.69*	*321.69*
RSM 026304001300 Manhole slab top, precast concrete, 4' diameter manhole, 8" thick top	19.00	EA	General Contractor	821	295	3,287	0	4,402	4,402	6,112
				44.07	*15.82*	*267.00*	*0.00*	*326.89*	*326.89*	*453.86*

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
HNC 026304004606 Manhole frame and cover, cast iron, city type, 24" diameter x 375 lb.	19.00	EA	General Contractor	837	301	5,073	0	6,211	6,211	8,623
				0.00	*0.00*	*0.00*	*250.00*	*250.00*	*250.00*	*347.11*
USR CONC-15 Concrete encasement	6,000.00	CY	General Contractor	0	0	0	1,500,000	1,500,000	1,500,000	2,082,651
(Note: Per Estimator. Cost based on previous work of similar scope.)										
USR PIPING-01 Miscellaneous sanitary sewer piping and fittings	1.00	LS	General Contractor	70,000	25,000	45,000	0	140,000	140,000	194,381
(Note: Allowance per Estimator. Cost based on professional judgment.)										
				0.00	*0.00*	*0.00*	*306.00*	*306.00*	*306.00*	*424.86*
USR PIPING-02 66" ductile iron pipe, includes trenching	650.00	LF	General Contractor	0	0	0	198,900	198,900	198,900	276,159
(Note: Per Estimator)										
				0.00	*0.00*	*0.00*	*270.00*	*270.00*	*270.00*	*374.88*
USR PIPING-03 54" ductile iron pipe, includes trenching	2,520.00	LF	General Contractor	0	0	0	680,400	680,400	680,400	944,690
(Note: Per Estimator.)										
				0.00	*0.00*	*0.00*	*210.00*	*210.00*	*210.00*	*291.57*
USR PIPING-04 42" ductile iron pipe, includes trenching	2,360.00	LF	General Contractor	0	0	0	495,600	495,600	495,600	688,108
(Note: Per Estimator.)										
				0.00	*0.00*	*0.00*	*120.00*	*120.00*	*120.00*	*166.61*
USR PIPING-05 24" ductile iron pipe, includes trenching	60.00	LF	General Contractor	0	0	0	7,200	7,200	7,200	9,997
(Note: Per Estimator.)										
				0.00	*0.00*	*0.00*	*108.00*	*108.00*	*108.00*	*149.95*
USR PIPING-06 20" ductile iron pipe, includes trenching	1,000.00	LF	General Contractor	0	0	0	108,000	108,000	108,000	149,951
(Note: Per Estimator.)										
				0.00	*0.00*	*0.00*	*102.00*	*102.00*	*102.00*	*141.62*
USR PIPING-07 18" ductile iron pipe, includes trenching	200.00	LF	General Contractor	0	0	0	20,400	20,400	20,400	28,324
(Note: Per Estimator.)										
				0.00	*0.00*	*0.00*	*93.00*	*93.00*	*93.00*	*129.12*
USR PIPING-08 15" ductile iron pipe, includes trenching	1,000.00	LF	General Contractor	0	0	0	93,000	93,000	93,000	129,124
(Note: Per Estimator.)										
				0.00	*0.00*	*0.00*	*84.00*	*84.00*	*84.00*	*116.63*
USR PIPING-09 12" ductile iron pipe, includes trenching	1,500.00	LF	General Contractor	0	0	0	126,000	126,000	126,000	174,943
(Note: Per Estimator.)										
				0.00	*0.00*	*0.00*	*78.00*	*78.00*	*78.00*	*108.30*

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
USR PIPING-10 10" ductile iron pipe, includes trenching (Note: Per Estimator.)	30.00	LF	General Contractor	0	0	0	2,340	2,340	2,340	3,249
				0.00	*0.00*	*0.00*	*72.00*	*72.00*	*72.00*	*99.97*
USR PIPING-11 8" ductile iron pipe, includes trenching (Note: Per Estimator.)	1,000.00	LF	General Contractor	0	0	0	72,000	72,000	72,000	99,967
Potable Water	**1.00**	**LS**	**General Contractor**	**80,866**	**93,040**	**42,500**	**331,740**	**548,145**	**548,145**	**761,063**
Site Work	**1.00**	**LS**	**General Contractor**	**68,366**	**88,040**	**35,000**	**0**	**191,405**	**191,405**	**265,753**
				2.74	*5.78*	*0.00*	*0.00*	*8.52*	*8.52*	*11.82*
USR DEMO-17 Demolition, handling, and disposal of 1" to 4" diameter pipe (Note: Based on USR-DEMO-14, 023154904200, 022203300100. Assumes 0.0008 cubic yards of debris per linear foot of pipe. Assumes 2 tons per cubic yard.)	300.00	LF	General Contractor	821	1,734	0	0	2,555	2,555	3,547
				3.44	*7.26*	*0.00*	*0.00*	*10.70*	*10.70*	*14.85*
USR DEMO-18 Demolition, handling, and disposal of 6" to 10" diameter pipe (Note: Based on USR-DEMO-15, 023154904200, 022203300100. Assumes 0.013 cubic yards of debris per linear foot of pipe. Assumes 2 tons per cubic yard.)	3,500.00	LF	General Contractor	12,027	25,419	0	0	37,447	37,447	51,992
				4.62	*9.77*	*0.00*	*0.00*	*14.39*	*14.39*	*19.98*
USR DEMO-19 Demolition, handling, and disposal of 12" to 18" diameter pipe (Note: Based on USR-DEMO-16, 023154904200, 022203300100. Assumes 0.045 cubic yards of debris per linear foot of pipe. Assumes 2 tons per cubic yard.)	1,600.00	LF	General Contractor	7,394	15,629	0	0	23,023	23,023	31,966
				7.09	*15.00*	*0.00*	*0.00*	*22.10*	*22.10*	*30.68*
USR DEMO-20 Demolition, handling, and disposal of 20" to 36" diameter pipe (Note: Based on USR-DEMO-17, 023154904200, 022203300100. Assumes 0.182 cubic yards of debris per linear foot of pipe. Assumes 2 tons per cubic yard.)	1,850.00	LF	General Contractor	13,124	27,757	0	0	40,880	40,880	56,760
				5,000.00	*2,500.00*	*5,000.00*	*0.00*	*12,500.00*	*12,500.00*	*17,355.42*
USR DEMO-19 Cut and plug pipe (Note: Per Estimator. Cost based on previous work of similar scope.)	7.00	EA	General Contractor	35,000	17,500	35,000	0	87,500	87,500	121,488
Piping and Appurtenances	**1.00**	**LS**	**General Contractor**	**12,500**	**5,000**	**7,500**	**331,740**	**356,740**	**356,740**	**495,310**
				0.00	*0.00*	*0.00*	*138.00*	*138.00*	*138.00*	*191.60*
USR PIPING-12 30" ductile iron pipe, includes trenching (Note: Per Estimator.)	690.00	LF	General Contractor	0	0	0	95,220	95,220	95,220	132,207
				0.00	*0.00*	*0.00*	*108.00*	*108.00*	*108.00*	*149.95*
USR PIPING-06 20" ductile iron	800.00	LF	General Contractor	0	0	0	86,400	86,400	86,400	119,961

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
pipe, includes trenching (Note: Per Estimator.)										
				0.00	*0.00*	*0.00*	*96.00*	*96.00*	*96.00*	*133.29*
USR PIPING-13 16" ductile iron pipe, includes trenching (Note: Per Estimator.)	680.00	LF	General Contractor	0	0	0	65,280	65,280	65,280	90,637
				0.00	*0.00*	*0.00*	*84.00*	*84.00*	*84.00*	*116.63*
USR PIPING-09 12" ductile iron pipe, includes trenching (Note: Per Estimator.)	1,010.00	LF	General Contractor	0	0	0	84,840	84,840	84,840	117,795
USR PIPING-14 Miscellaneous potable water piping and fittings (Note: Allowance per Estimator. Cost based on professional judgment.)	1.00	LS	General Contractor	12,500	5,000	7,500	0	25,000	25,000	34,711
Storm Sewer	**1.00**	**LS**	**General Contractor**	**214,942**	**213,464**	**1,042,043**	**0**	**1,470,450**	**1,470,450**	**2,041,622**
Site Work	**1.00**	**LS**	**General Contractor**	**78,658**	**117,932**	**30,000**	**0**	**226,590**	**226,590**	**314,606**
				7.09	*15.00*	*0.00*	*0.00*	*22.10*	*22.10*	*30.68*
USR DEMO-20 Demolition, handling, and disposal of 20" to 36" diameter pipe (Note: Based on USR-DEMO-17, 023154904200, 022203300100. Assumes 0.182 cubic yards of debris per linear foot of pipe. Assumes 2 tons per cubic yard.)	2,600.00	LF	General Contractor	18,444	39,009	0	0	57,454	57,454	79,770
				14.39	*30.44*	*0.00*	*0.00*	*44.83*	*44.83*	*62.24*
USR DEMO-21 Demolition, handling, and disposal of 42" and greater diameter pipe (Note: Based on USR-DEMO-18, 023154904200, 022203300100. Assumes 0.505 cubic yards of debris per linear foot of pipe. Assumes 2 tons per cubic yard.)	2,100.00	LF	General Contractor	30,214	63,923	0	0	94,137	94,137	130,703
				5,000.00	*2,500.00*	*5,000.00*	*0.00*	*12,500.00*	*12,500.00*	*17,355.42*
USR DEMO-19 Cut and plug pipe (Note: Per Estimator. Cost based on previous work of similar scope.)	6.00	EA	General Contractor	30,000	15,000	30,000	0	75,000	75,000	104,133
Outfall Collection System	**1.00**	**LS**	**General Contractor**	**5,430**	**1,492**	**32,950**	**0**	**39,872**	**39,872**	**55,359**
				172.74	*62.03*	*1,225.00*	*0.00*	*1,459.77*	*1,459.77*	*2,026.79*
RSM 026304001190 Manholes, concrete, precast, 6' I.D., 4' deep, excludes base, excavation, backfill, frame and cover	10.00	EA	General Contractor	1,727	620	12,250	0	14,598	14,598	20,268
				43.18	*15.51*	*173.00*	*0.00*	*231.69*	*231.69*	*321.69*
RSM 026304001300 Manhole slab top, precast concrete, 4' diameter manhole, 8" thick top	10.00	EA	General Contractor	432	155	1,730	0	2,317	2,317	3,217
				44.07	*15.82*	*267.00*	*0.00*	*326.89*	*326.89*	*453.86*

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
HNC 026304004606 Manhole frame and cover, cast iron, city type, 24" diameter x 375 lb.	10.00	EA	General Contractor	441	158	2,670	0	3,269	3,269	4,539
				6.29	*1.24*	*32.00*	*0.00*	*39.53*	*39.53*	*54.88*
RSM 026305302040 Reinforced concrete pipe (RCP), 24" diameter, 8' lengths, class 3, excludes excavation or backfill, gaskets	400.00	LF	General Contractor	2,516	496	12,800	0	15,812	15,812	21,954
				31.45	*6.20*	*350.00*	*0.00*	*387.65*	*387.65*	*538.22*
HNC 026305302910 Reinforced concrete pipe (RCP), precast end section, 24" diameter pipe, excludes excavation or backfill	10.00	EA	General Contractor	314	62	3,500	0	3,876	3,876	5,382
Piping and Appurtenances	**1.00**	**LS**	**General Contractor**	**130,854**	**94,040**	**979,093**	**0**	**1,203,987**	**1,203,987**	**1,671,657**
USR PIPING-18 Miscellaneous storm sewer piping and fittings (Note: Allowance per Estimator. Cost based on previous work of similar scope.)	1.00	LS	General Contractor	6,000	2,000	4,000	0	12,000	12,000	16,661
				48.52	*40.52*	*475.76*	*0.00*	*564.81*	*564.81*	*784.19*
USR PIPE-96-01 Reinforced concrete pipe (RCP), 96" diameter, 8' lengths, class 3 (Note: Average depth of 18 feet.)	400.00	LF	General Contractor	19,409	16,209	190,304	0	225,922	225,922	313,678
				41.07	*33.93*	*394.32*	*0.00*	*469.32*	*469.32*	*651.62*
USR PIPE-84-01 Reinforced concrete pipe (RCP), 84" diameter, 8' lengths, class 3 (Note: Average depth of 22 feet.)	335.00	LF	General Contractor	13,758	11,366	132,097	0	157,221	157,221	218,291
				35.49	*29.82*	*394.32*	*0.00*	*459.63*	*459.63*	*638.16*
USR PIPE-84-02 Reinforced concrete pipe (RCP), 84" diameter, 8' lengths, class 3 (Note: Average depth of 14 feet.)	270.00	LF	General Contractor	9,581	8,052	106,466	0	124,099	124,099	172,304
				34.09	*28.80*	*394.32*	*0.00*	*457.21*	*457.21*	*634.81*
USR PIPE-84-03 Reinforced concrete pipe (RCP), 84" diameter, 8' lengths, class 3 (Note: Average depth of 12 feet.)	340.00	LF	General Contractor	11,592	9,791	134,069	0	155,452	155,452	215,835
				34.51	*28.98*	*393.78*	*0.00*	*457.27*	*457.27*	*634.90*
USR PIPE-78-01 Reinforced concrete pipe (RCP), 78" diameter, 8' lengths, class 3 (Note: Average depth of 14 feet.)	320.00	LF	General Contractor	11,044	9,274	126,010	0	146,328	146,328	203,167

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
				28.38	*23.83*	*220.78*	*0.00*	*272.99*	*272.99*	*379.02*
USR PIPE-72-01 Reinforced concrete pipe (RCP), 72" diameter, 8' lengths, class 3 (Note: Average depth of 12 feet.)	150.00	LF	General Contractor	4,257	3,575	33,117	0	40,948	40,948	56,854
				23.41	*19.60*	*197.70*	*0.00*	*240.71*	*240.71*	*334.21*
USR PIPE-60-01 Reinforced concrete pipe (RCP), 60" diameter, 8' lengths, class 3 (Note: Average depth of 12 feet.)	255.00	LF	General Contractor	5,969	4,999	50,414	0	61,381	61,381	85,223
				18.51	*15.40*	*110.80*	*0.00*	*144.71*	*144.71*	*200.92*
USR PIPE-48-01 Reinforced concrete pipe (RCP), 48" diameter, 8' lengths, class 3 (Note: Average depth of 14 feet.)	930.00	LF	General Contractor	17,216	14,319	103,044	0	134,580	134,580	186,855
				16.66	*13.87*	*76.98*	*0.00*	*107.51*	*107.51*	*149.27*
USR PIPE-42-01 Reinforced concrete pipe (RCP), 42" diameter, 8' lengths, class 3 (Note: Average depth of 12 feet.)	190.00	LF	General Contractor	3,166	2,635	14,626	0	20,427	20,427	28,361
				16.66	*9.52*	*52.94*	*0.00*	*79.12*	*79.12*	*109.85*
USR PIPE-36-01 Reinforced concrete pipe (RCP), 36" diameter, 8' lengths, class 3 (Note: Average depth of 14 feet.)	630.00	LF	General Contractor	10,497	5,997	33,352	0	49,846	49,846	69,207
				14.66	*8.58*	*41.30*	*0.00*	*64.54*	*64.54*	*89.61*
USR PIPE-30-01 Reinforced concrete pipe (RCP), 30" diameter, 8' lengths, class 3 (Note: Average depth of 12 feet.)	260.00	LF	General Contractor	3,812	2,231	10,738	0	16,781	16,781	23,300
				8.73	*3.13*	*32.72*	*0.00*	*44.58*	*44.58*	*61.90*
USR PIPE-24-01 Reinforced concrete pipe (RCP), 24" diameter, 8' lengths, class 3 (Note: Average depth of 12 feet.)	835.00	LF	General Contractor	7,287	2,616	27,321	0	37,224	37,224	51,683
				8.92	*3.25*	*32.72*	*0.00*	*44.89*	*44.89*	*62.33*
USR PIPE-24-02 Reinforced concrete pipe (RCP), 24" diameter, 8' lengths, class 3 (Note: Average depth of 14 feet.)	160.00	LF	General Contractor	1,428	520	5,235	0	7,183	7,183	9,972
				31.45	*6.20*	*350.00*	*0.00*	*387.65*	*387.65*	*538.22*
HNC 026305302910 Reinforced concrete pipe (RCP), precast end section, 24" diameter pipe,	2.00	EA	General Contractor	63	12	700	0	775	775	1,076

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
excludes excavation or backfill										
				34.94	*6.89*	*535.00*	*0.00*	*576.83*	*576.83*	*800.89*
HNC 026305302960 Reinforced concrete pipe (RCP), precast end section, 30" diameter pipe, excludes excavation or backfill	1.00	EA	General Contractor	35	7	535	0	577	577	801
				41.82	*8.25*	*715.00*	*0.00*	*765.06*	*765.06*	*1,062.24*
HNC 026305304300 Reinforced concrete pipe (RCP), precast end section, 36" diameter pipe, excludes excavation or backfill	1.00	EA	General Contractor	42	8	715	0	765	765	1,062
				225.82	*207.41*	*1,350.00*	*0.00*	*1,783.23*	*1,783.23*	*2,475.90*
HNC 026305304900 Reinforced concrete pipe (RCP), precast end section, 60" diameter pipe, excludes excavation or backfill	1.00	EA	General Contractor	226	207	1,350	0	1,783	1,783	2,476
				2,845.87	*115.56*	*2,600.00*	*0.00*	*5,561.43*	*5,561.43*	*7,721.67*
USR 026101000161 Headwall, concrete, cast in place, 30 degree skewed wingwall, 96" diameter pipe w/flap gate	1.00	EA	General Contractor	2,846	116	2,600	0	5,561	5,561	7,722
(Note: Material cost based on 026101000160 for a 60" diameter headwall. Cost for 96" headwall was determined using a ratio exponent of 0.6. Crew productivity was decreased due to a larger headwall.)										
				2,626.96	*106.67*	*2,400.00*	*0.00*	*5,133.62*	*5,133.62*	*7,127.70*
USR 026101000162 Headwall, concrete, cast in place, 30 degree skewed wingwall, 84" diameter pipe w/flap gate	1.00	EA	General Contractor	2,627	107	2,400	0	5,134	5,134	7,128
(Note: Material cost based on 026101000160 for a 60" diameter headwall. Cost for 84" headwall was determined using a ratio exponent of 0.6. Crew productivity was decreased due to a larger headwall.)										
Natural Gas Distribution and Transmission	**1.00**	**LS**	**General Contractor**	**78,314**	**85,132**	**40,000**	**628,650**	**832,096**	**832,096**	**1,155,310**
Site Work	**1.00**	**LS**	**General Contractor**	**55,814**	**77,632**	**25,000**	**0**	**158,446**	**158,446**	**219,991**
				2.74	*5.78*	*0.00*	*0.00*	*8.52*	*8.52*	*11.82*
USR DEMO-17 Demolition, handling, and disposal of 1" to 4" diameter pipe	4,400.00	LF	General Contractor	12,036	25,435	0	0	37,471	37,471	52,027
(Note: Based on USR-DEMO-14, 023154904200, 022203300100. Assumes 0.0008 cubic yards of debris per linear foot of pipe. Assumes 2 tons per cubic yard.)										
				3.44	*7.26*	*0.00*	*0.00*	*10.70*	*10.70*	*14.85*
USR DEMO-18 Demolition, handling, and disposal of 6" to 10" diameter pipe	3,400.00	LF	General Contractor	11,684	24,693	0	0	36,377	36,377	50,507
(Note: Based on USR-DEMO-15, 023154904200, 022203300100. Assumes 0.013 cubic yards of debris per linear foot of pipe. Assumes 2 tons per cubic yard.)										
				7.09	*15.00*	*0.00*	*0.00*	*22.10*	*22.10*	*30.68*
USR DEMO-20 Demolition,	1,000.00	LF	General Contractor	7,094	15,004	0	0	22,098	22,098	30,681

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
handling, and disposal of 20" to 36" diameter pipe										
(Note: Based on USR-DEMO-17, 023154904200, 022203300100. Assumes 0.182 cubic yards of debris per linear foot of pipe. Assumes 2 tons per cubic yard.)										
				5,000.00	*2,500.00*	*5,000.00*	*0.00*	*12,500.00*	*12,500.00*	*17,355.42*
USR DEMO-19 Cut and plug pipe	5.00	EA	General Contractor	25,000	12,500	25,000	0	62,500	62,500	86,777
(Note: Per Estimator. Cost based on previous work of similar scope.)										
Piping and Appurtenances	**1.00**	**LS**	**General Contractor**	**22,500**	**7,500**	**15,000**	**628,650**	**673,650**	**673,650**	**935,318**
				0.00	*0.00*	*0.00*	*360.00*	*360.00*	*360.00*	*499.84*
USR PIPING-19 24" schedule 40 steel pipe, includes trenching	1,020.00	LF	General Contractor	0	0	0	367,200	367,200	367,200	509,833
(Note: Per Estimator.)										
				0.00	*0.00*	*0.00*	*90.00*	*90.00*	*90.00*	*124.96*
USR PIPING-20 6" schedule 40 steel pipe, includes trenching	1,620.00	LF	General Contractor	0	0	0	145,800	145,800	145,800	202,434
(Note: Per Estimator.)										
				0.00	*0.00*	*0.00*	*60.00*	*60.00*	*60.00*	*83.31*
USR PIPING-21 4" schedule 40 steel pipe, includes trenching	920.00	LF	General Contractor	0	0	0	55,200	55,200	55,200	76,642
(Note: Per Estimator.)										
				0.00	*0.00*	*0.00*	*45.00*	*45.00*	*45.00*	*62.48*
USR PIPING-22 3" schedule 40 steel pipe, includes trenching	990.00	LF	General Contractor	0	0	0	44,550	44,550	44,550	61,855
(Note: Per Estimator.)										
				0.00	*0.00*	*0.00*	*30.00*	*30.00*	*30.00*	*41.65*
USR PIPING-23 2" schedule 40 steel pipe, includes trenching	530.00	LF	General Contractor	0	0	0	15,900	15,900	15,900	22,076
(Note: Per Estimator.)										
USR PIPING-24 Miscellaneous natural gas distribution and transmission piping and fittings	1.00	LS	General Contractor	22,500	7,500	15,000	0	45,000	45,000	62,480
(Note: Allowance per Estimator. Cost based on professional judgment.)										
Equipment	**1.00**	**LS**	**General Contractor**	**60,000**	**15,000**	**25,000**	**0**	**100,000**	**100,000**	**138,843**
USR EQUIP-09 Miscellaneous equipment	1.00	LS	General Contractor	60,000	15,000	25,000	0	100,000	100,000	138,843
(Note: Allowance per Estimator. Cost based on professional judgment.)										
20 Utility Relocation - Electrical and Communication	**1.00**	**LS**	**General Contractor**	**683,972**	**188,473**	**745,064**	**289,180**	**1,906,690**	**1,906,690**	**2,647,312**
Site Work	**1.00**	**LS**	**General Contractor**	**227,975**	**73,634**	**134,000**	**101,680**	**537,289**	**537,289**	**745,990**

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
				0.93	*0.00*	*0.00*	*0.00*	*0.93*	*0.93*	*1.29*
HNC 160553007012 Conduit with wire, 3/4" diameter, remove	13,000.00	LF	General Contractor	12,061	0	0	0	12,061	12,061	16,746
				0.00	*0.00*	*0.00*	*1,240.00*	*1,240.00*	*1,240.00*	*1,721.66*
USR DEMO-20 Demo electrical pole (Note: Per Estimator.)	82.00	EA	General Contractor	0	0	0	101,680	101,680	101,680	141,176
				1.35	*0.00*	*0.00*	*0.00*	*1.35*	*1.35*	*1.87*
USR 160553007012 Demo cable TV (CATV)	8,000.00	LF	General Contractor	10,797	0	0	0	10,797	10,797	14,990
				61.83	*25.67*	*20.00*	*0.00*	*107.50*	*107.50*	*149.26*
USR DEMO-21 Demo fiber optic cable (aerial) (Note: Material cost per Estimator.)	1,700.00	LF	General Contractor	105,117	43,634	34,000	0	182,751	182,751	253,738
USR DEMO-22 Miscellaneous electrical demolition (Note: Allowance per Estimator. Cost based on professional judgment.)	1.00	LS	General Contractor	100,000	30,000	100,000	0	230,000	230,000	319,340
Electrical	**1.00**	**LS**	**General Contractor**	**455,998**	**114,839**	**611,064**	**187,500**	**1,369,401**	**1,369,401**	**1,901,322**
Electrical Distribution	**1.00**	**LS**	**General Contractor**	**114,740**	**11,528**	**242,627**	**187,500**	**556,396**	**556,396**	**772,519**
				0.00	*0.00*	*0.00*	*75.00*	*75.00*	*75.00*	*104.13*
USR ELEC-16 Directionally drilled underground electrical cable (Note: Per Estimator. Cost based on previous work of similar scope.)	2,500.00	LF	General Contractor	0	0	0	187,500	187,500	187,500	260,331
				2,252.87	*440.01*	*2,900.00*	*0.00*	*5,592.88*	*5,592.88*	*7,765.35*
HNC 163108304350 Overhead to underground conversion, 15 kV, type OU-1-D, incl insulator, cross arm, grounding and fused cutout	12.00	EA	General Contractor	27,034	5,280	34,800	0	67,115	67,115	93,184
				6.19	*0.00*	*8.10*	*0.00*	*14.29*	*14.29*	*19.83*
RSM 025804101090 PVC, with coupling, 6" diameter, schedule 40, installed by direct burial in slab or duct bank	7,500.00	LF	General Contractor	46,390	0	60,750	0	107,140	107,140	148,756
				146.39	*0.00*	*410.00*	*0.00*	*556.39*	*556.39*	*772.51*
RSM 161209005700 Wire, copper, stranded, 600 volt, 300 kcmil, type XLPE-USE(RHW), in raceway	75.00	CLF	General Contractor	10,979	0	30,750	0	41,729	41,729	57,938
				35.35	*0.00*	*138.00*	*0.00*	*173.35*	*173.35*	*240.68*
HNC 160608006130 Ground	12.00	EA	General Contractor	424	0	1,656	0	2,080	2,080	2,888

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
insert, 250-500 kcmil cable range, 4-3/8" x 16" holes, embedded										
				255.08	*77.00*	*400.00*	*0.00*	*732.09*	*732.09*	*1,016.45*
USR ELEC-02 Tie-in to existing service	12.00	EA	General Contractor	3,061	924	4,800	0	8,785	8,785	12,197
(Note: Based on Crew EELER15. Material cost per Estimator. Cost based on previous work of similar scope.)										
				181.27	*35.40*	*330.00*	*0.00*	*546.67*	*546.67*	*759.01*
HNC 163104000100 Down guying assemblies, 25' to 40' pole	24.00	EA	General Contractor	4,350	850	7,920	0	13,120	13,120	18,216
				284.13	*55.49*	*204.00*	*0.00*	*543.62*	*543.62*	*754.78*
HNC 163104001000 Head guying assemblies, 50' span, 25' to 40' pole	24.00	EA	General Contractor	6,819	1,332	4,896	0	13,047	13,047	18,115
				137.13	*26.78*	*8.90*	*0.00*	*172.81*	*172.81*	*239.94*
HNC 163104002000 Insulator, guy strain	36.00	EA	General Contractor	4,937	964	320	0	6,221	6,221	8,638
				409.66	*80.01*	*6,525.00*	*0.00*	*7,014.67*	*7,014.67*	*9,739.40*
HNC 163305000560 Load break switch, outdoor, 3 phase, 14.4 kV, 2000 A	12.00	EA	General Contractor	4,916	960	78,300	0	84,176	84,176	116,873
				224.82	*57.58*	*735.00*	*0.00*	*1,017.39*	*1,017.39*	*1,412.58*
HNC 025805003040 Aluminum pole, round, tapered seamless shaft, 30', for distribution	15.00	EA	General Contractor	3,372	864	11,025	0	15,261	15,261	21,189
				1,293.46	*186.72*	*3,900.00*	*0.00*	*5,380.17*	*5,380.17*	*7,470.01*
HNC 161202601650 Copper cable, stranded, insulated, 400 kcmil, installed on the poles	1.90	MLF	General Contractor	2,458	355	7,410	0	10,222	10,222	14,193
Cable TV	**1.00**	**LS**	**General Contractor**	**6,211**	**2,202**	**6,263**	**0**	**14,675**	**14,675**	**20,376**
				739.08	*0.00*	*1,250.00*	*0.00*	*1,989.08*	*1,989.08*	*2,761.70*
HNC 168107504100 Coaxial cable, copper covered aluminum center core, cable drop, 1/4" diameter, in conduit	5.01	MLF	General Contractor	3,703	0	6,263	0	9,965	9,965	13,836
				0.14	*0.22*	*0.00*	*0.00*	*0.36*	*0.36*	*0.50*
RSM 023156300300 Excavating, utility trench, plow, single cable, plowed into coarse material	5,010.00	LF	General Contractor	680	1,108	0	0	1,788	1,788	2,483
				0.68	*0.61*	*0.00*	*0.00*	*1.29*	*1.29*	*1.79*
HNC 023151101220 Backfill, trench, 40 - 60 H.P. front-end loader, excludes compaction	1,375.00	LCY	General Contractor	933	841	0	0	1,774	1,774	2,464

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
				0.65	*0.18*	*0.00*	*0.00*	*0.83*	*0.83*	*1.16*
HNC 023153107260 Compaction, around structures and trenches, walk behind, vibrating plate	1,375.00	ECY	General Contractor	895	252	0	0	1,148	1,148	1,593
Fiber Optic	**1.00**	**LS**	**General Contractor**	**8,898**	**1,109**	**10,175**	**0**	**20,181**	**20,181**	**28,020**
				1.23	*0.00*	*1.65*	*0.00*	*2.88*	*2.88*	*4.01*
RSM 167104001100 Fiber optics cable, 50 microns, 12 fiber, indoor	1,800.00	LF	General Contractor	2,223	0	2,970	0	5,193	5,193	7,210
				44.18	*0.00*	*9.25*	*0.00*	*53.43*	*53.43*	*74.19*
RSM 167104001160 Fiber optics connectors, transmission, for 125 micron cable	2.00	EA	General Contractor	88	0	19	0	107	107	148
				141.39	*0.00*	*685.00*	*0.00*	*826.39*	*826.39*	*1,147.38*
RSM 167104001220 Fiber optics receiver, 6.2 mile range	2.00	EA	General Contractor	283	0	1,370	0	1,653	1,653	2,295
				141.39	*0.00*	*685.00*	*0.00*	*826.39*	*826.39*	*1,147.38*
RSM 167104001280 Fiber optics transmitter, 6.2 mile range	2.00	EA	General Contractor	283	0	1,370	0	1,653	1,653	2,295
				141.39	*0.00*	*1,100.00*	*0.00*	*1,241.39*	*1,241.39*	*1,723.58*
RSM 167104001400 Fiber optics repeater, 6.2 mile range	1.00	EA	General Contractor	141	0	1,100	0	1,241	1,241	1,724
				100.99	*0.00*	*143.00*	*0.00*	*243.99*	*243.99*	*338.77*
RSM 167104001480 Fiber optics cable enclosure, interior, NEMA 13	2.00	EA	General Contractor	202	0	286	0	488	488	678
				3,154.02	*616.01*	*1,700.00*	*0.00*	*5,470.04*	*5,470.04*	*7,594.78*
HNC 161202603240 Service drop cable, alum., ACSR, stranded, quadplex w/neutral, 600 V, 2/0, installed on the poles	1.80	MLF	General Contractor	5,677	1,109	3,060	0	9,846	9,846	13,671
Telephone	**1.00**	**LS**	**General Contractor**	**76,149**	**0**	**102,000**	**0**	**178,149**	**178,149**	**247,347**
				7,614.85	*0.00*	*10,200.00*	*0.00*	*17,814.85*	*17,814.85*	*24,734.74*
HNC 167107600420 Telephone cable, #22 AWG, 150 pair, in conduit	10.00	MLF	General Contractor	76,149	0	102,000	0	178,149	178,149	247,347
Miscellaneous	**1.00**	**LS**	**General Contractor**	**250,000**	**100,000**	**250,000**	**0**	**600,000**	**600,000**	**833,060**
USR ELEC-17 Miscellaneous electrical and communication	1.00	LS	General Contractor	250,000	100,000	250,000	0	600,000	600,000	833,060

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
(Note: Allowance per Estimator. Cost based on professional judgment.)										
25 Utility Relocation - Transmission Lines	**1.00**	**LS**	**General Contractor**	**7,924**	**5,694**	**0**	**6,000,000**	**6,013,617**	**6,013,617**	**8,349,509**
Site Work	**1.00**	**LS**	**General Contractor**	**7,924**	**5,694**	**0**	**0**	**13,617**	**13,617**	**18,907**
				1.68	*1.21*	*0.00*	*0.00*	*2.89*	*2.89*	*4.01*
USR EARTH-22 Excavate trench in medium soil w/2 CY gradall, backfill w/front-end loader, compaction w/walk behind vibrating plate	4,720.00	CY	General Contractor	7,924	5,694	0	0	13,617	13,617	18,907
(Note: Based on 023156100372, 023151101220, and 023153107260.)										
Electrical	**1.00**	**LS**	**General Contractor**	**0**	**0**	**0**	**6,000,000**	**6,000,000**	**6,000,000**	**8,330,602**
USR ELEC-18 Transmission line relocation	1.00	LS	General Contractor	0	0	0	6,000,000	6,000,000	6,000,000	8,330,602
(Note: TXU Energy quote for 138 kVA line relocation - 14 January 2005.)										
04 Dams	**1.00**	**LS**	**Dam General Contractor||Note||(Note: Samuels Avenue Dam and Marine Creek Low Water Dam)**	**7,670,624**	**2,413,522**	**7,008,219**	**13,043,000**	**30,135,365**	**30,135,365**	**37,796,708**
(Note: Downstream of the bypass channel a new dam structure will be constructed on the West Fork Trinity River. The dam will consist of seven (7) leaf gates placed into a concrete support structure. Three (3) sluice gates will also be provided in the bottom of the dam to assist in the control of upstream water levels. The concrete structure will have a maintenance access bridge to provide maintenance access to the leaf gates on the top of the dam and will be supported on a series of drilled shafts anchored in a bedrock foundation. A sheet piling system is proposed as a positive cut-off for seepage and as part of the construction sequencing plan. A low water fixed broad crest weir dam is proposed on Marine Creek in near proximity to the Samuels Avenue Dam. The dam will be constructed of roller compacted concrete with a cast-in-place concrete cap on all portions above the stilling basin. Driven sheet piling will be used for seepage cut-off. A small lock structure for pleasure boats is proposed for connectivity between the Marine Creek and Samuels Dam impoundments. The lock will be a reinforced concrete structure with miter gates.)										
05 Samuels Avenue Dam	**1.00**	**LS**	**Dam General Contractor||Note||(Note: Samuels Avenue Dam and Marine Creek Low Water Dam)**	**5,155,626**	**1,776,020**	**4,231,597**	**10,907,000**	**22,070,242**	**22,070,242**	**27,681,182**
Mobilization and Demobilization	**1.00**	**LS**	**Bypass Channel and Levees General Contractor**	**6,086**	**9,223**	**0**	**0**	**15,309**	**15,309**	**19,201**
				141.82	*263.18*	*0.00*	*0.00*	*404.99*	*404.99*	*507.96*
USR MOBIL-01 Moblization and Demobilization of Heavy Equipment	24.00	EA	Bypass Channel and Levees General Contractor	3,404	6,316	0	0	9,720	9,720	12,191

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
				141.82	*228.79*	*0.00*	*0.00*	*370.60*	*370.60*	*464.82*
USR MOBIL-02 Mobilization and Demobilization of Medium Equipment	12.00	EA	Bypass Channel and Levees General Contractor	1,702	2,745	0	0	4,447	4,447	5,578
				245.26	*40.24*	*0.00*	*0.00*	*285.50*	*285.50*	*358.08*
USR MOBIL-03 Mobilization and Demobilization of Large Self-Propelled Equipment	4.00	EA	Bypass Channel and Levees General Contractor	981	161	0	0	1,142	1,142	1,432
Site Preparation	**1.00**	**LS**	**Dam General Contractor||Note||(Note: Samuels Avenue Dam and Marine Creek Low Water Dam)**	**1,436,955**	**1,072,646**	**483,770**	**0**	**2,993,371**	**2,993,371**	**3,754,379**
				845.91	*642.27*	*227.00*	*0.00*	*1,715.18*	*1,715.18*	*2,151.23*
HNC 022504002550 Sheet piling, wales, connections and struts, 2/3 salvage	815.00	TON	Dam General Contractor||Note||(Note: Samuels Avenue Dam and Marine Creek Low Water Dam)	689,418	523,448	185,005	0	1,397,872	1,397,872	1,753,254
				812.11	*429.30*	*0.00*	*0.00*	*1,241.42*	*1,241.42*	*1,557.02*
RSM 024559000600 Mobilization, to 84", set up and removedrill rig, for caissons, maximum	2.00	EA	Dam General Contractor||Note||(Note: Samuels Avenue Dam and Marine Creek Low Water Dam)	1,624	859	0	0	2,483	2,483	3,114
				243.08	*152.68*	*79.00*	*0.00*	*474.76*	*474.76*	*595.46*
USR 024658000600 Caissons, open style in stable ground, to 50' deep, 54" diameter, 0.727 C.Y./L.F., machine drilled, includes excavation, concrete, 50 lb. reinforcing/C.Y.	2,700.00	VLF	Dam General Contractor||Note||(Note: Samuels Avenue Dam and Marine Creek Low Water Dam)	656,312	412,244	213,300	0	1,281,856	1,281,856	1,607,743
				15.00	*10.00*	*15.00*	*0.00*	*40.00*	*40.00*	*50.17*
USR HAUL-04 Access Roads	2,000.00	LF	Dam General Contractor||Note||(Note: Samuels Avenue Dam and Marine Creek Low Water Dam)	30,000	20,000	30,000	0	80,000	80,000	100,338
(Note: Per Estimator. Cost based on professional judgment.)										
				2,400.00	*2,000.00*	*20,000.00*	*0.00*	*24,400.00*	*24,400.00*	*30,603.24*

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
USR CARE-01 Care of water - pumps	2.00	EA	Dam General Contractor||Note||(Note: Samuels Avenue Dam and Marine Creek Low Water Dam)	4,800	4,000	40,000	0	48,800	48,800	61,206
(Note: Allowance per Estimator. Cost based on professional judgment.)										
				4,000.00	*5,000.00*	*2,000.00*	*0.00*	*11,000.00*	*11,000.00*	*13,796.54*
USR CARE-02 Care of water - settling basin	1.00	EA	Dam General Contractor||Note||(Note: Samuels Avenue Dam and Marine Creek Low Water Dam)	4,000	5,000	2,000	0	11,000	11,000	13,797
(Note: Allowance per Estimator. Cost based on professional judgment.)										
USR CARE-03 Care of water - discharge piping	1.00	LS	Dam General Contractor||Note||(Note: Samuels Avenue Dam and Marine Creek Low Water Dam)	9,600	2,000	10,000	0	21,600	21,600	27,091
(Note: Allowance per Estimator. Cost based on professional judgment.)										
USR CARE-04 Care of water - outfall	1.00	LS	Dam General Contractor||Note||(Note: Samuels Avenue Dam and Marine Creek Low Water Dam)	2,400	2,000	3,000	0	7,400	7,400	9,281
(Note: Allowance per Estimator. Cost based on professional judgment.)										
				0.42	*1.14*	*0.00*	*0.00*	*1.55*	*1.55*	*1.95*
HNC 022301000365 Grub and stack, 200 H.P. dozer	17,750.00	CY	Dam General Contractor||Note||(Note: Samuels Avenue Dam and Marine Creek Low Water Dam)	7,412	20,160	0	0	27,572	27,572	34,581
				1.32	*3.42*	*0.00*	*0.00*	*4.74*	*4.74*	*5.95*
USR EARTH-04 Screening and Stockpiling	17,750.00	CY	Dam General Contractor||Note||(Note: Samuels Avenue Dam and Marine Creek Low Water Dam)	23,446	60,770	0	0	84,216	84,216	105,627
(Note: Per Estimator)										
				0.87	*2.50*	*0.00*	*0.00*	*3.36*	*3.36*	*4.22*

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
USR HAUL-03 Hauling, 12 CY truck, 5 mile haul, soil	8,875.00	LCY	Dam General Contractor||Note||(Note: Samuels Avenue Dam and Marine Creek Low Water Dam)	7,715	22,143	0	0	29,859	29,859	37,449
(Note: Based on crew CTDHB34C.)										
				0.19	*0.00*	*0.34*	*0.00*	*0.53*	*0.53*	*0.67*
USR 023707001100 Erosion control, silt fence, polypropylene, adverse conditions, 3' high	1,000.00	LF	Dam General Contractor||Note||(Note: Samuels Avenue Dam and Marine Creek Low Water Dam)	192	0	340	0	532	532	667
				0.32	*0.22*	*2.25*	*0.00*	*2.79*	*2.79*	*3.50*
USR 023707001250 Erosion control, hay bales, staked	20.00	LF	Dam General Contractor||Note||(Note: Samuels Avenue Dam and Marine Creek Low Water Dam)	6	4	45	0	56	56	70
				0.72	*0.44*	*2.00*	*0.00*	*3.16*	*3.16*	*3.96*
USR EROSION-01 Straw Wattles	40.00	LF	Dam General Contractor||Note||(Note: Samuels Avenue Dam and Marine Creek Low Water Dam)	29	18	80	0	126	126	159
(Note: Cost per Estimator.)										
Earthwork	**1.00**	**LS**	**Dam General Contractor||Note||(Note: Samuels Avenue Dam and Marine Creek Low Water Dam)**	**222,259**	**347,066**	**20,864**	**100,000**	**690,189**	**690,189**	**865,656**
				1.47	*2.32*	*0.00*	*0.00*	*3.80*	*3.80*	*4.76*
USR EARTH-09 Excavate, load, and haul, medium material, wheeled loader, hwy hauler (1.6 cyc/hr)	139,840.00	CY	Dam General Contractor||Note||(Note: Samuels Avenue Dam and Marine Creek Low Water Dam)	206,147	324,787	0	0	530,934	530,934	665,913
(Note: Based on 023154260265 and 023154901100.)										
				0.82	*1.67*	*0.00*	*0.00*	*2.48*	*2.48*	*3.12*

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
USR EARTH-10 Fill for embankments, load, 1 mile haul, spread w/dozer, compact w/vibrating roller	12,000.00	CY	Dam General Contractor||Note||(Note: Samuels Avenue Dam and Marine Creek Low Water Dam)	9,795	20,010	0	0	29,805	29,805	37,383
(Note: Based on 023155100020 and COMP-01.)										
				4.94	*1.77*	*16.30*	*0.00*	*23.01*	*23.01*	*28.86*
RSM 022405001700 Dewatering, sump hole construction, pit with gravel collar, corrugated, 12" gravel collar, 12" corr. pipe, 16 ga, includes excavation and gravel pit	1,280.00	LF	Dam General Contractor||Note||(Note: Samuels Avenue Dam and Marine Creek Low Water Dam)	6,317	2,269	20,864	0	29,450	29,450	36,937
(Note: 32 sumps each at 40' deep.)										
USR DRAIN-04 Sub drain system	1.00	LS	Dam General Contractor||Note||(Note: Samuels Avenue Dam and Marine Creek Low Water Dam)	0	0	0	100,000	100,000	100,000	125,423
(Note: Per Estimator.)										
Pavement, Sidewalks, Curbs and Gutter	**1.00**	**LS**	**Dam General Contractor||Note||(Note: Samuels Avenue Dam and Marine Creek Low Water Dam)**	**0**	**0**	**0**	**40,000**	**40,000**	**40,000**	**50,169**
				0.00	*0.00*	*0.00*	*100.00*	*100.00*	*100.00*	*125.42*
USR CONC-07 Parking lot	400.00	CY	Dam General Contractor||Note||(Note: Samuels Avenue Dam and Marine Creek Low Water Dam)	0	0	0	40,000	40,000	40,000	50,169
(Note: Per Estimator. Cost based on previous work of similar scope.)										
Retaining Walls	**1.00**	**LS**	**Dam General Contractor||Note||(Note: Samuels Avenue Dam and Marine Creek Low Water Dam)**	**3,481,750**	**343,400**	**3,693,963**	**792,000**	**8,311,113**	**8,311,113**	**10,424,055**
				175.00	*20.00*	*105.00*	*0.00*	*300.00*	*300.00*	*376.27*
USR CONC-08 Concrete	7,630.00	CY	Dam General	1,335,250	152,600	801,150	0	2,289,000	2,289,000	2,870,935

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
footing/slab on grade			Contractor||Note||(Note: Samuels Avenue Dam and Marine Creek Low Water Dam)							
(Note: Per Estimator. Cost based on previous work of similar scope. Assumes concrete pumping.)										
				225.00	*20.00*	*130.00*	*0.00*	*375.00*	*375.00*	*470.34*
USR CONC-03 Concrete walls	9,540.00	CY	Dam General Contractor||Note||(Note: Samuels Avenue Dam and Marine Creek Low Water Dam)	2,146,500	190,800	1,240,200	0	3,577,500	3,577,500	4,487,011
(Note: Per Estimator. Cost based on previous work of similar scope. Assumes concrete pumping.)										
				0.00	*0.00*	*0.55*	*0.00*	*0.55*	*0.55*	*0.69*
USR CONC-05 Reinforcing bar - 175 lbs/cy	3,004,750.00	LB	Dam General Contractor||Note||(Note: Samuels Avenue Dam and Marine Creek Low Water Dam)	0	0	1,652,613	0	1,652,613	1,652,613	2,072,758
(Note: Per Estimator)										
				0.00	*0.00*	*0.00*	*20.00*	*20.00*	*20.00*	*25.08*
USR CONC-06 Precast concrete revetment	39,600.00	SF	Dam General Contractor||Note||(Note: Samuels Avenue Dam and Marine Creek Low Water Dam)	0	0	0	792,000	792,000	792,000	993,351
(Note: Per Estimator. Cost based on previous work of similar scope.)										
Finishes	**1.00**	**LS**	**Dam General Contractor||Note||(Note: Samuels Avenue Dam and Marine Creek Low Water Dam)**	**0**	**0**	**0**	**350,000**	**350,000**	**350,000**	**438,981**
USR FINISHES-01 Painting and Coating	1.00	LS	Dam General Contractor||Note||(Note: Samuels Avenue Dam and Marine Creek Low Water Dam)	0	0	0	350,000	350,000	350,000	438,981
(Note: Per Estimator.)										
Flood Control Structures	**1.00**	**LS**	**Dam General Contractor||Note|**	**0**	**0**	**0**	**8,330,000**	**8,330,000**	**8,330,000**	**10,447,744**

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
			|(Note: Samuels Avenue Dam and Marine Creek Low Water Dam)							
USR 04-01 Gates - 18' x 48' Flood Gates	7.00	EA	Dam General Contractor||Note||(Note: Samuels Avenue Dam and Marine Creek Low Water Dam)	*0.00* 0	*0.00* 0	*0.00* 0	*650,000.00* 4,550,000	*650,000.00* 4,550,000	*650,000.00* 4,550,000	*815,250.15* 5,706,751
(Note: Per Estimator.)										
USR 04-02 Hydraulic operator system	7.00	EA	Dam General Contractor||Note||(Note: Samuels Avenue Dam and Marine Creek Low Water Dam)	*0.00* 0	*0.00* 0	*0.00* 0	*450,000.00* 3,150,000	*450,000.00* 3,150,000	*450,000.00* 3,150,000	*564,403.95* 3,950,828
(Note: Per Estimator)										
USR 04-03 Stop logs - 18' x 48'	6.00	EA	Dam General Contractor||Note||(Note: Samuels Avenue Dam and Marine Creek Low Water Dam)	*0.00* 0	*0.00* 0	*0.00* 0	*85,000.00* 510,000	*85,000.00* 510,000	*85,000.00* 510,000	*106,609.64* 639,658
(Note: Per Estimator.)										
USR 04-04 Sluice gates - 4' x 6'	3.00	EA	Dam General Contractor||Note||(Note: Samuels Avenue Dam and Marine Creek Low Water Dam)	*0.00* 0	*0.00* 0	*0.00* 0	*40,000.00* 120,000	*40,000.00* 120,000	*40,000.00* 120,000	*50,169.24* 150,508
(Note: Per Estimator.)										
Buildings	**1.00**	**LS**	**Dam General Contractor||Note||(Note: Samuels Avenue Dam and Marine Creek Low Water Dam)**	**0**	**0**	**0**	**1,045,000**	**1,045,000**	**1,045,000**	**1,310,671**
USR BUILDINGS-01 Pre-	3,000.00	SF	Dam General	*0.00* 0	*0.00* 0	*0.00* 0	*100.00* 300,000	*100.00* 300,000	*100.00* 300,000	*125.42* 376,269

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
engineered maintenance building			Contractor||Note||(Note: Samuels Avenue Dam and Marine Creek Low Water Dam)							
(Note: Per Estimator)										
USR BUILDINGS-02 Control building	1.00	LS	Dam General Contractor||Note||(Note: Samuels Avenue Dam and Marine Creek Low Water Dam)	0	0	0	100,000	100,000	100,000	125,423
(Note: Per Estimator)										
USR BUILDINGS-03 Security building	1.00	LS	Dam General Contractor||Note||(Note: Samuels Avenue Dam and Marine Creek Low Water Dam)	0	0	0	150,000	150,000	150,000	188,135
(Note: Per Estimator)										
				0.00	*0.00*	*0.00*	*75.00*	*75.00*	*75.00*	*94.07*
USR BRIDGES-01 Bridge	6,600.00	SF	Dam General Contractor||Note||(Note: Samuels Avenue Dam and Marine Creek Low Water Dam)	0	0	0	495,000	495,000	495,000	620,844
(Note: Per Estimator)										
Electrical	**1.00**	**LS**	**Dam General Contractor||Note||(Note: Samuels Avenue Dam and Marine Creek Low Water Dam)**	**8,576**	**3,685**	**33,000**	**250,000**	**295,261**	**295,261**	**370,325**
USR ELEC-03 Barrier warning system	1.00	LS	Dam General Contractor||Note||(Note: Samuels Avenue Dam and Marine Creek Low Water Dam)	0	0	0	50,000	50,000	50,000	62,712
(Note: Per Estimator)										
				0.21	*0.29*	*0.00*	*0.00*	*0.50*	*0.50*	*0.63*
HNC 023156100372 Excavating, trench, medium soil, 6' to 10' deep, 2 C.Y. bucket, gradall,	3,400.00	BCY	Dam General Contractor||Note||(Note: Samuels	725	982	0	0	1,706	1,706	2,140

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
excludes sheeting or dewatering			Avenue Dam and Marine Creek Low Water Dam)							
				0.68	*0.61*	*0.00*	*0.00*	*1.29*	*1.29*	*1.62*
HNC 023151101220 Backfill, trench, 40 - 60 H.P. front-end loader, excludes compaction	3,400.00	LCY	Dam General Contractor||Note||(Note: Samuels Avenue Dam and Marine Creek Low Water Dam)	2,307	2,080	0	0	4,388	4,388	5,503
				0.65	*0.18*	*0.00*	*0.00*	*0.83*	*0.83*	*1.05*
HNC 023153107260 Compaction, around structures and trenches, walk behind, vibrating plate	3,400.00	ECY	Dam General Contractor||Note||(Note: Samuels Avenue Dam and Marine Creek Low Water Dam)	2,214	623	0	0	2,838	2,838	3,559
				665.86	*0.00*	*6,600.00*	*0.00*	*7,265.86*	*7,265.86*	*9,113.06*
HNC 161208200240 Underground cable, 500 kcmil, type USE, excl excavation & backfill	5.00	MLF	Dam General Contractor||Note||(Note: Samuels Avenue Dam and Marine Creek Low Water Dam)	3,329	0	33,000	0	36,329	36,329	45,565
USR ELEC-04 Electric lights site	1.00	LS	Dam General Contractor||Note||(Note: Samuels Avenue Dam and Marine Creek Low Water Dam)	0	0	0	80,000	80,000	80,000	100,338
(Note: Per Estimator)										
USR ELEC-05 Transformer	1.00	LS	Dam General Contractor||Note||(Note: Samuels Avenue Dam and Marine Creek Low Water Dam)	0	0	0	20,000	20,000	20,000	25,085
(Note: Per Estimator.)										
USR ELEC-06 Instrumentation	1.00	LS	Dam General Contractor||Note||(Note: Samuels Avenue Dam and Marine Creek Low Water Dam)	0	0	0	100,000	100,000	100,000	125,423
(Note: Per Estimator.)										
10 Marine Creek Low Water	**1.00**	**LS**	**Dam General**	**2,514,997**	**637,502**	**2,776,623**	**2,136,000**	**8,065,122**	**8,065,122**	**10,115,526**

Description	Quantity	UOM	Contractor	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost	CostToPrime	ContractCost
Dam/Lock			**Contractor||Note||(Note: Samuels Avenue Dam and Marine Creek Low Water Dam)**							
Mobilization and Demobilization	**1.00**	**LS**	**Bypass Channel and Levees General Contractor**	**5,029**	**8,089**	**0**	**0**	**13,118**	**13,118**	**16,453**
USR MOBIL-01 Moblization and Demobilization of Heavy Equipment	20.00	EA	Bypass Channel and Levees General Contractor	*141.82* 2,836	*263.18* 5,264	*0.00* 0	*0.00* 0	*404.99* 8,100	*404.99* 8,100	*507.96* 10,159
USR MOBIL-02 Mobilization and Demobilization of Medium Equipment	12.00	EA	Bypass Channel and Levees General Contractor	*141.82* 1,702	*228.79* 2,745	*0.00* 0	*0.00* 0	*370.60* 4,447	*370.60* 4,447	*464.82* 5,578
USR MOBIL-03 Mobilization and Demobilization of Large Self-Propelled Equipment	2.00	EA	Bypass Channel and Levees General Contractor	*245.26* 491	*40.24* 80	*0.00* 0	*0.00* 0	*285.50* 571	*285.50* 571	*358.08* 716
Site Preparation	**1.00**	**LS**	**Dam General Contractor||Note||(Note: Samuels Avenue Dam and Marine Creek Low Water Dam)**	**475,372**	**363,525**	**127,585**	**0**	**966,482**	**966,482**	**1,212,192**
HNC 022504002550 Sheet piling, wales, connections and struts, 2/3 salvage	560.00	TON	Dam General Contractor||Note||(Note: Samuels Avenue Dam and Marine Creek Low Water Dam)	*845.91* 473,711	*642.27* 359,670	*227.00* 127,120	*0.00* 0	*1,715.18* 960,501	*1,715.18* 960,501	*2,151.23* 1,204,690
HNC 022301000365 Grub and stack, 200 H.P. dozer	660.00	CY	Dam General Contractor||Note||(Note: Samuels Avenue Dam and Marine Creek Low Water Dam)	*0.42* 276	*1.14* 750	*0.00* 0	*0.00* 0	*1.55* 1,025	*1.55* 1,025	*1.95* 1,286
USR EARTH-04 Screening and	660.00	CY	Dam General	*1.32* 872	*3.42* 2,260	*0.00* 0	*0.00* 0	*4.74* 3,131	*4.74* 3,131	*5.95* 3,928