OSAWATOMIE CITY COUNCIL

WORK SESSION / MEETING AGENDA
Thursday, July 23, 2009
7:00 p.m., Memorial Hall

WORK SESSION

1. Fireworks
2. 2010 Budget
3. Residency Requirement for City Employees

REGULAR MEETING – **7:30 p.m.**

A. Call to Order

B. Roll Call

C. Approval of Agenda
   1. Levee Certification Phase II

D. Adjournment of Regular Meeting

CITY OF OSAWATOMIE
439 Main Street
P.O. Box 37
Osawatomie, Kansas 66064
913-755-2146
FAX: 913-755-4164

TO: Mayor and City Council of Osawatomie

FROM: Bret Glendening; City Manager

RE: Sample Residency Requirement Policy

Date: July 23, 2009

At the May 28, 2009 work session, a variety of possible derivations of a residency requirement addition to our personnel policies were discussed. Based on everyone's comments, I've crafted a policy that I believe everyone can live with. The current policies were adopted by Resolution # 583 on April 12, 2007. A resolution amending the personnel policies (E-3) will be required.

The current policy is as follows:

"It is the desire of the City that all employees reside within the corporate limits of the City of Osawatomie. Applicants who are residents of the City of Osawatomie shall be given preference over non-residents, all other qualifications being equal. Due to the nature of work or the necessity for quick response time, the City Manager may require employees in certain classifications to reside within the City limits or within a specified distance from the City."

The proposed policy is as follows (changes in **bold**):

"It is the desire of the City that all employees reside within the corporate limits of the City of Osawatomie. **Successful a**pplicants **for any department head or crew leader level position shall be required to establish residency within the corporate limits of the City of Osawatomie within one (1) year of their official start date. Applicants for any open position** who are residents of the City of Osawatomie shall be given preference over non-residents **provided that** all other qualifications **are** equal. Due to the nature of work or the necessity for quick response time, the City Manager may require **any** employee~~s in certain classifications~~ to reside within the City limits or within a specified distance from the City."

STANDARD FORM OF AGREEMENT
BETWEEN
CITY AND ENGINEER
FOR
PROFESSIONAL SERVICES

This is an Agreement, made as of _____, 2009, between the City of Osawatomie, Kansas (CITY) and Wilson & Company, Inc., Engineers & Architects (ENGINEER). CITY intends to accredit the Osawatomie Levee System in accordance with the National Flood Insurance Program (NFIP) regulations as described in Title 44, Chapter 1, Section 65.10 of the Code of Federal Regulations (44 CFR Section 65.10). The limits of the Osawatomie Levee system are as illustrated in Figure 1 of this agreement. Accreditation is required for this levee system to be acknowledged in the NFIP and the new FEMA Flood Insurance Rate Maps.

ENGINEER will sub-contract AMEC Earth & Environmental, Inc. (AMEC) for Geotechnical Engineering and Engineering Support services included in this agreement.

This project is based on findings and recommendations of the previously completed Preliminary Levee Assessment (or Discovery Phase). This project is Phase II, Final Levee Assessment.

Levee improvements necessary for levee accreditation may be determined during this Phase II, however, design services for any necessary levee improvements determined to be necessary are not included in the basis services in this agreement.

CITY and ENGINEER in consideration of their mutual covenants herein agree in respect to the performance of professional engineering services by ENGINEER and the payment for those services by CITY as set forth below.

SECTION 1 - BASIC SERVICES OF ENGINEER

Phase II: Final Levee Assessment

Engineer shall provide scope of services as detailed in **Attachment 1** to this agreement, for Phase II – Final Levee Assessment.

SECTION 2 - ADDITIONAL SERVICES OF ENGINEER

2.1. Services Requiring Authorization in Advance.

If authorized in writing by CITY, ENGINEER shall furnish or obtain from others Additional Services of the types listed in paragraphs 2.1.1 through 2.1.4, inclusive. These services are not included as part of Basic Services. These Additional Services will be paid for by CITY as indicated in Section 5.

2.1.1. Services resulting from significant changes in the general scope, extent or character of the Project or its design including, but not limited to, changes in size, complexity, CITY's schedule, and revising previously accepted studies, reports, design documents or Contract Documents when such revisions are required by changes in laws, rules, regulations, ordinances, codes or orders enacted subsequent to the preparation of such studies, reports or documents, or are due to any other causes beyond ENGINEER's control.

2.1.2. Furnishing services of independent professional associates and consultants for other than Basic Services for customary civil engineering, surveying, and geotechnical design; and providing data or services when CITY employs ENGINEER to provide such data or services in lieu of furnishing the same.

2.1.3. Providing any type of engineering surveys other than Basic Services included in Section 1.

2.1.4. Additional services in connection with the Project, including services which are to be furnished by CITY in accordance with Section 3, and services not otherwise provided for in this Agreement.

2.2. Required Additional Services. If CITY desires to complete Final Design services following Phase II for improvements necessary for levee accreditation (if any are determined to be necessary), ENGINEER shall provide CITY with an Agreement Addendum proposal for Final Design services at that time.

SECTION 3 - CITY'S RESPONSIBILITIES

CITY shall do the following so as not to delay the services of ENGINEER:

3.1. Designate a person to act as CITY's representative with respect to the services to be rendered under this Agreement. Such person shall have complete authority to transmit instructions, receive information, interpret and define CITY's policies and decisions with respect to ENGINEER's services for the Project.

3.2. Assist ENGINEER by placing at ENGINEER's disposal all available information pertinent to the Project as described in Attachment 1.

3.3. Arrange for access to and make all provisions for ENGINEER to enter upon public and private property as required for ENGINEER to perform services under this Agreement.

3.4. Examine all submittals presented by ENGINEER, obtain advice of an attorney, insurance counselor and other consultants as CITY deems appropriate for such examination and render in writing decisions pertaining thereto so as not to delay the services of ENGINEER.

3.5. Provide such accounting, independent cost estimating and insurance counseling services as may be required for the Project, such legal services as CITY may require or ENGINEER may reasonably request with regard to legal issues pertaining to the Project.

3.6. Give prompt written notice to ENGINEER whenever CITY observes or otherwise becomes aware of any development that affects the scope or timing of ENGINEER's services.

3.7. Furnish, or direct ENGINEER to provide, Additional Services as stipulated in Section 2 of this Agreement or other services as required.

3.8. Bear all costs incident to compliance with the requirements of this Section 3.

SECTION 4 - PERIODS OF SERVICE

4.1. The provisions of this Section 4 and the various rates of compensation for ENGINEER's services provided for elsewhere in this Agreement have been agreed to in anticipation of the orderly and continuous progress of the Project through completion of Phase II. ENGINEER's obligation to render services hereunder will extend for a period which may reasonably be required. If specific periods of time for rendering services are set forth or specific dates by which services are to be completed are provided and if such dates are exceeded through no fault of ENGINEER, all rates, measures and amounts of compensation provided herein shall be subject to equitable adjustment.

4.2. Contingent upon Notice to Proceed being provided to ENGINEER by July 25, 2009, the services described in Section 1 (Phase II) shall be completed by **March 30, 2012**. A more detailed schedule is included in Attachment 1.

ENGINEER shall not be held responsible for delays caused by receiving late or inadequate submittals from USGS, FEMA, or others.

4.3. This schedule may be modified if it's determined to be in the best interest for the CITY, for FEMA coordination purposes, as approved by the CITY.

4.4. Documentation necessary to satisfy requirements of 44 CFR Section 65.10 (documentation to be provided in Phase II of this project) was due to FEMA before June 18, 2009, per CITY's Provisionally Accredited Levee (PAL) agreement with FEMA. According to FEMA, the latest possible PAL documentation submittal date prior to updated Flood Insurance Rate Maps becoming effective without flood protection from the Osawatomie Levee System is April 2012. FEMA anticipates the updated FIRM's will become effective in August 2012.

SECTION 5 - PAYMENTS TO ENGINEER

5.1. Methods of Payment for Services and Expenses of ENGINEER.

5.1.1. For Basic Services. CITY shall pay ENGINEER for Basic Services rendered under SECTION I on cost plus basis as follows:

Cost Plus

Payments for those services outlined in SECTION I of this Agreement are to be based on direct labor cost times the current labor multiplier, plus reimbursable direct expenses. The labor multiplier includes overhead (currently 1.80) and profit (10%), and is currently 3.08. The labor multiplier is subject to review and change annually, based on changes in overhead rates. Charges for services and expenses incurred under SECTION I will be based on the rates and charges in effect at the time services are performed and expenses are incurred.

The maximum Cost Plus fees shall not exceed **$289,775.00** without prior written approval from CITY. Supporting Fee Data is provided in Attachment 2.

5.1.2. ENGINEER may alter the distribution of compensation between individual phases of the work noted herein to be consistent with services actually rendered, but shall not exceed the total estimated compensation amount unless approved in writing by the CITY.

5.1.3. The total estimated compensation for ENGINEER's services included in 5.1.1. incorporates all labor, overhead, profit, reimbursable expenses, and the sub-consultant charges.

5.2. Times of Payments.

5.2.1. ENGINEER shall submit statements at four-week intervals for Basic and Additional Services rendered. The charge on account of the lump sum fee will be based upon ENGINEER's percent complete at the time of billing of the total services to be completed. CITY shall submit payment to ENGINEER within 30 days of receipt of invoice.

5.3. Other Provisions Concerning Payments.

5.3.1. In the event of termination by CITY under paragraph 7.1 upon the completion of any phase of the Basic Services, progress payments due ENGINEER for services rendered through such phase shall constitute total payment for such services. In the event of such termination by CITY during any phase of the Basic Services, ENGINEER also will be reimbursed for the charges of independent professional associates and consultants employed by ENGINEER to render Basic Services, and paid for services rendered during that phase on the basis of ENGINEER's percent complete at the time of termination by ENGINEER's principals and employees engaged directly on the Project. In the event of any such termination, ENGINEER will be paid for all unpaid Additional Services that had been previously authorized in writing by CITY.

SECTION 6 - OPINIONS OF COST

6.1. Opinions of Cost.

6.1.1. Since ENGINEER has no control over the cost of labor, materials, equipment or services furnished by others, or over the Contractor(s)' methods of determining prices, or over competitive bidding or market conditions, ENGINEER's opinion of probable Construction

Cost provided for herein are to be made on the basis of ENGINEER's experience and qualifications and represent ENGINEER's best judgment as an experienced and qualified professional engineer, familiar with the construction industry; but ENGINEER cannot and does not guarantee that proposals, bids or actual Total Project or Construction Costs will not vary from opinions of probable cost prepared by ENGINEER. If prior to the Bidding or Negotiating Phase, CITY wishes greater assurance as to Total Project or Construction Costs, CITY shall employ an independent cost estimator as provided in paragraph 3.7.

SECTION 7 - GENERAL CONSIDERATION

7.1. Termination.

7.1.1. The obligation to provide further services under this Agreement may be terminated by either party upon thirty days' written notice in the event of substantial failure by the other party to perform in accordance with the terms hereof through no fault of the terminating party.

7.2. Reuse of Documents.

7.2.1. All documents prepared or furnished by ENGINEER (and ENGINEER's independent professional associates and consultants) pursuant to this Agreement are instruments of service in respect of the Project and ENGINEER shall retain an ownership and property interest therein whether or not the Project is completed. CITY may make and retain copies for information and reference in connection with the use and occupancy of the Project by CITY and others; however, such documents are not intended or represented to be suitable for reuse by CITY or others on extensions of the Project or on any other project. Any reuse without written verification or adaptation by ENGINEER for the specific purpose intended will be at CITY's sole risk and without liability or legal exposure to ENGINEER, or to ENGINEER's independent professional associates or consultants, and CITY shall indemnify and hold harmless ENGINEER and ENGINEER's independent professional associates and consultants from all claims, damages, losses and expenses including attorneys' fees arising out of or resulting therefrom. Any such verification or adaptation will entitle ENGINEER to further compensation at rates to be agreed upon by CITY and ENGINEER.

7.3. Insurance.

7.3.1. Commercial General Liability
The ENGINEER shall provide public liability insurance coverage in an amount no less than $500,000 covering the liability of the ENGINEER on an occurrence basis. The insurer must be acceptable to the CITY.

7.3.2. Automobile Liability
The ENGINEER shall provide coverage protecting the ENGINEER against claims for bodily injury and/or property damage arising out of the ownership or use of any owned, hired and/or

non-owned vehicle. Required minimum limits: $500,000 each accident, or a combined total of $1,000,000.

7.3.3. Workers Compensation

Before beginning work, the ENGINEER shall furnish to the CITY satisfactory proof that he has taken out, for the period covered by the work under this contract, full workers' compensation coverage as required by state law for all persons who he may employ directly in carrying out the work contemplated under this contract, and shall hold the CITY free and harmless for all personal injuries of all persons who the ENGINEER may employ directly.

7.3.4. Professional Liability - Errors and Omissions

The ENGINEER shall provide Architects or Engineers Professional Liability Insurance with limits not less than $1,000,000, covering the liability of the ENGINEER. The insurer must be acceptable to the CITY. In the event coverage provided is claims made coverage, the insurance shall be maintained for a period of not less than three (3) years after completion of the contract or in lieu thereof purchase of tail coverage (extended reporting period) under which the CITY shall be afforded protection.

7.3.5. Certificate(s) of Insurance

Certificate(s) of Insurance acceptable to the CITY shall be filed with the CITY at the time the contract between the CITY and the ENGINEER is executed, if requested by CITY. These certificates shall contain a provisions that coverage that is afforded under the policies will not be cancelled until at least thirty (30) days prior written notice has been given to the CITY and acknowledged.

7.3.6. Notice of Claim

The ENGINEER, upon receipt of notice of any claim in excess of $1,000 in connection with this contract shall promptly notify the CITY, providing full details thereof, including an estimate of the amount or loss of liability.

7.3.7 Indemnification Clause

The ENGINEER agrees to indemnify and save harmless the CITY, its officials, servants, officers, directors and employees from and against all expenses and judgments for personal injury or death or damage to property where, and to the extent caused by the ENGINEER's negligent acts, errors or omissions.

7.4. Controlling Law.

7.4.1. This Agreement is to be governed by the law of the State of Kansas.

7.5. Successors and Assigns.

7.5.1. CITY and ENGINEER each is hereby bound and the partners, successors, executors, administrators and legal representatives of CITY and ENGINEER (and to the extent permitted by paragraph 7.5.2 the assigns of CITY and ENGINEER) are hereby bound to the other party

to this Agreement and to the partners, successors, executors, administrators and legal representatives (and said assigns) of such other party, in respect of all covenants, agreements and obligations of this Agreement.

7.5.2. Neither CITY nor ENGINEER shall assign, sublet or transfer any rights under or interest in (including, but without limitation, moneys that may become due or moneys that are due) this Agreement without the written consent of the other, except to the extent that any assignment, subletting or transfer is mandated by law or the effect of this limitation may be restricted by law. Unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under this Agreement. Nothing contained in this paragraph shall prevent ENGINEER from employing such independent professional associates and consultants as ENGINEER may deem appropriate to assist in the performance of services hereunder.

7.5.3. Nothing under this Agreement shall be construed to give any rights or benefits in this Agreement to anyone other than CITY and ENGINEER, and all duties and responsibilities undertaken pursuant to this Agreement will be for the sole and exclusive benefit of CITY and ENGINEER and not for the benefit of any other party.

This Agreement (consisting of pages 1 to 7, Attachments 1 and 2, and Figure 1, inclusive) (19 total pages) constitutes the entire agreement between CITY and ENGINEER and supersedes all prior written or oral understandings. This Agreement may only be amended, supplemented, modified or canceled by a duly executed written instrument.

IN WITNESS WHEREOF, the parties hereto have made and executed this Agreement as of the day and year first above written.

CITY:

City of Osawatomie, Kansas
439 Main Street
P.O. Box 37
Osawatomie, KS 66064
913-755-2146

By:_____

Name:_____

Title:_____

By: _____

Name:_____

Title:_____

ENGINEER:

Wilson & Company, Inc.,
Engineers & Architects
903 E. 104th St, Suite 200
Kansas City, MO 64131
816-701-3100

_____
Douglas G. Danaher, PE, Operation Manager
Doug.Danaher@wilsonco.com

_____
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Bill.Legge@wilsonco.com

SCOPE OF SERVICES
OSAWATOMIE LEVEE ASSESSMENT – PHASE II
July 14, 2009

ENGINEER – Wilson & Company, Inc., Engineers & Architects (WCI) (Prime Consultant) and AMEC (Sub-Consultant – Geotechnical and Engineering Support)

CITY – City of Osawatomie, Kansas

This document defines the ENGINEER's scope of services. These scope items are based on requirements of the National Flood Insurance Program regulations as described in Title 44, Chapter 1, Section 65.10 of the Code of Federal Regulations (44 CFR Section 65.10).

The purpose of this project is to satisfy these regulations so that FEMA will acknowledge the Osawatomie Levee System on the updated Flood Insurance Rate Maps, or document levee system improvements necessary to satisfy 44 CFR Section 65.10 requirements.

The levee assessment will be completed in two phases:

Phase I (Previously Completed) – Preliminary Levee Assessment (Discovery Phase):

> This phase included data collection, data review, and determination of additional data collection and analyses required to satisfy 44 CFR 65.10. No analyses were included in this Phase I. A Phase I summary report has been presented to the CITY.

Phase II (Included Herein) – Final Levee Assessment:

> This current phase includes completing the additional data collection and analyses identified in Phase I, as necessary to satisfy 44 CFR 65.10.

The levee system includes all embankments, flood walls, structures, interior drainage systems, operation and maintenance working together to modify the land area inundated by the Base Flood, as illustrated in Figure 1 of this Agreement.

ENGINEER shall complete this utilizing GIS and other file management processes (paper and electronic) to allow the data collected and created during this assessment to be easily accessed, referenced and maintained for future levee accreditations.

PHASE II - FINAL LEVEE ACCREDITATION ASSESSMENT

This Phase II work scope is the necessary scope to satisfy FEMA 44 CRF 65.10.

Task I. Data Collection

Task I.A. Base Survey Services:

Survey data shall be collected as necessary to complete analysis of: closures, embankment stability, settlement, interior drainage and to develop As-Built plans (illustrating current conditions).

1. This scope of services is based on FEMA's commitment to provide ground surface elevation data sufficient for FEMA Zone AE mapping requirements for all areas illustrated

on Figure 1. If insufficient ground surface data necessary for certification is provided by FEMA, a supplemental agreement will be utilized to obtain additional necessary data.

It's been established Lidar ground surface elevation data (to be collected and processed by USGS) will be available during or before June 2010.

2. Field Survey services shall be completed to:

   a. Misc field data collection, such as utility locations, floodwalls, levee cross sections, etc. (estimate 10 days with 2-man crew)

   Utility crossings of the levee system will be located if the elevations are critical to the stability analysis of the levee.

Engineer shall coordinate schedule and access for survey services with CITY prior to survey services commencing. Engineer shall translate collected survey data into usable format for analysis.

Task II. FEMA Design Criteria Assessment

The following deliverables shall be produced as part of the Phase II submittal, per Section 65.10 of the NFIP regulations and on FEMA Form 3 "Riverine".

- Record drawings "As Is"
- Profile and hydraulic analysis to support freeboard
- Embankment protection design analysis
- Embankment and foundation seepage and stability analysis
- Settlement analysis
- Sediment transport analysis
- Operation and maintenance plan

II.A. Geotechnical Exploration

Subsurface exploration is required to evaluate the geotechnical aspects of the system. The exploration program includes conventional soil borings extending through the levee crest to a terminal depth of three times the levee height.

For cost estimating purposes, we have assumed the maximum depth of each boring will be 45 feet. Borings will have an average spacing of approximately 1500 feet between borings. We expect up to 23 borings will be required to characterize the levee system. We assume that only one mobilization of a truck-mounted drill rig will be required to complete the subsurface exploration.

Should findings from the initial subsurface exploration indicate significantly variable conditions or reveal areas (such as landfills or voids) that need additional exploration to better define anomalous reaches, we may need to execute additional subsurface exploration and laboratory analyses to better characterize the geotechnical aspects of the levee system such that an accreditation assessment can be made. If it's determined these additional subsurface

explorations are necessary, a supplemental agreement will be necessary, as fees for additional subsurface explorations are not included in this agreement.

Given favorable working conditions, we expect the initial exploration will take up to 16 working days to complete. Given the alluvial setting of the project and the geologic nuances associated with such a setting, we plan to have a Senior Geologist present during the exploration to log the drilling efforts and make "real time" decisions regarding the daily activities associated with the exploration.

This task includes laboratory testing to determine in-situ moisture and density, grain size distribution, Atterberg limits, shear strength and hydraulic conductivity.

Engineer shall coordinate schedule and access for geotechnical services with CITY, prior to geotechnical boring commencing. Engineer shall ensure coordinates of all borings are documented and are included in the As-Is Plans.

II.B. Hydrologic Studies

Because the best available hydrology, hydraulic models and corresponding water surface profiles are not current, are inconsistent and are not of sufficient accuracy in some areas, a hydrologic and hydraulic (H&H) analysis of the Marais Des Cygnes River and Pottawatomie Creek is proposed. The hydrology and hydraulic analysis will be performed compliant to FEMA Map Modernization guidelines and specifications such that the results can be utilized for FEMA map updates to the flood insurance study. The dry side ponding areas will be studied to determine ponding floodplain limits and impacts on upstream development.

II.B.1 River Hydrology

The Phase I analysis indicated that the 1% chance flows for both the Marais des Cygnes River and Pottawatomie Creek are conflicting and out of date. Flows in the Design Memorandum 1A were computed in 1966. Flows contained within the effective FEMA FIS were based upon 1984 or prior gage data. Updated hydrology for these streams has not been computed in over 25 years. While significant development has not occurred within the basin over the last 25 to 45 years, there is a significant amount of additional data available in the rainfall record. Because of this, hydrology needs to be validated and/or updated. Two options have been identified for completing updated hydrology.

FEMA has committed to provide updated hydrology for both the Marais des Cygnes River and Pottawatomie Creek. They will provide peak flow rates (no flow hydrographs / timing) for the base flood event. It's estimated for this proposal that is all that will be necessary to complete levee certification. Therefore, the fee included in this agreement if for coordination with FEMA and quality assurance of the resulting FEMA hydrology. No hydrologic analysis is included herein.

Estimating timing based on stream gage hydrographs, necessary for geotechinal analysis shall be completed.

If it's determined that more detailed hydrographs are needed to satisfy geotechnical components of the levee certification (meaning the levee will not meet requirements for steady state flow conditions) hydrographs / timing may need to be developed. The most

comprehensive way to derive new hydrology would be the completion of new rainfall-runoff models that would provide peak hydrographs for both the Marais des Cygnes River and Pottawatomie Creek. The process for this would be very similar to the process the COE used in their 1966 design memorandum. Storm centering would be required over each of the basins, and calibration to existing gages could be completed. This method would provide a hydrograph for determining timing for transient embankment stability analyses as well as information on timing of peaks for determining backwater conditions for hydraulic modeling. Advantages to this method of analysis are the accuracy of the flow data, hydrograph data, and hydrograph timing between the Marais des Cygnes River and Pottawatomie Creek. Disadvantages to this method are the time, cost and complexity of creating such a model. If this type of modeling were desired or if it becomes required, consideration could be given to exploring the possibility of entering into a cooperative agreement with the Kansas City COE for completion of this modeling, as they may already be equipped with additional data and information to provide this analysis more cost effectively.

At this time it is recommended the City proceed with utilizing the hydrology FEMA will provide for use in levee certification, which is what is included in this agreement. We believe there is a strong likelihood that this steady state analysis (with approximate conservative / approximate hydrographs) will provide sufficient hydrology information for completion of certification. While the need for more detailed hydrographs / timing is a slight possibility, it is not anticipated to be necessary at this time and therefore is specifically excluded from this agreement. If it becomes necessary, it can be added as a supplemental service for an additional fee at a later time.

II.B.2 Interior Drainage Hydrology

To complete analysis of the interior drainage, floodplains upstream of and created by the levee outfall structures shall be determined. There are 16 gravity flow and 5 pumped levee outfall structures throughout the Osawatomie levee system.

The approach to analyzing the interior drainage hydrology will vary depending on site-specific conditions. Contributing drainage areas shall be verified and updated utilizing the ground surface data (sufficient for 2' contours) included in this agreement. Flow hydrographs for each outfall structure shall be developed using HEC-HMS or SWMMM and reservoir routing shall be considered in determining the maximum backwater surface elevations.

Independent QA of Hydrologic Studies is included.

II.C. Hydraulic Studies

FEMA has committed to provide hydraulic analysis of the Marais des Cygnes River and Pottawatomie Creek to provide updated base flood elevations to reflect the updated river hydrology and more accurate ground surface elevation data. The updated base flood elevations will be utilized to assess the levee system for such items as freeboard, slope stability, embankment protection and levee operation.

Because FEMA has committed to complete the necessary Hydraulic Studies on the Marais des Cygnes River and Pottawatomie Creek, the fee included in this agreement is for coordination

and quality assurance of the models and resulting water surface elevations provided by FEMA. No hydraulic modeling analysis is included in this agreement.

If it's determined additional modeling is necessary for completion of levee certification, a supplemental agreement will be necessary to complete that work.

Hydraulic analysis of the levee outfall structures shall be completed to analyze the functionality of interior drainage systems, on the dry side of the levees.

The freeboard assessment will be made based on the requirements of Section 65.10(b)(1) of the NFIP regulations. If it's determined the freeboard requirements of Section 65.10 are not met (for river or dry side), additional analyses may be completed in accordance with Section 65.10. Additional analyses could include an evaluation of the uncertainty in the estimated base flood elevation profile and include, but not necessarily be limited to an assessment of statistical confidence limits of the 100-yr discharge; changes in stage-discharge relationships; and the sources, potential, and magnitude of debris, sediment, and ice accumulation. In no case will FEMA accept a freeboard of less than two feet.

II.C.1. River Hydraulics

Pottawatomie Creek - A detailed hydraulic analysis has not been completed for Pottawatomie Creek. FEMA has committed to complete a detailed hydraulic analysis and provide the resulting hydraulic model and resulting water surface elevations to the City. Therefore included in this agreement is Quality Assurance of the models provided by FEMA. It's assumed for this agreement that a detailed hydraulic analysis will be provided that establishes a 1% water surface elevation. It's also assumed 10-yr, 50-yr, and 500-yr DCS compliant water surface profiles will be provided by FEMA, as necessary for the interior drainage analysis.

Marais des Cygnes River - A detailed hydraulic analysis has been completed for the Marais des Cygnes River, but it is not current. FEMA has committed to complete an updated detailed hydraulic analysis and provide the resulting hydraulic model and resulting water surface elevations to the City. Therefore, included in this agreement is Quality Assurance of the models provided by FEMA. It's assumed for this agreement that a detailed hydraulic analysis will be provided that establishes a 1% water surface elevation. It's also assumed 10-yr, 50-yr, and 500-yr DCS compliant water surface profiles will be provided by FEMA, as necessary for the interior drainage analysis.

Independent QA of River Hydraulics is included.

II.C.2. Freeboard Analysis

Following completion of river hydrology and hydraulic analysis, Engineer shall plot updated base flood elevation, top of levee profiles and river flowlines to determine if FEMA freeboard requirements are satisfied.

Independent QA of freeboard analysis is included.

II.C.3. Interior Drainage System Hydraulics

Hydraulic analysis for the levee outfall structures shall be completed to determine backwater (ponding) elevations and establish floodplains upstream of each levee outfall structure. This analysis will determine if the interior drainage systems are sufficient to avoid excessive interior flooding and document the floodplains created by backwater ponding created by the outfall structures.

The hydraulic analysis will be completed utilizing methods acceptable to FEMA and may include USACE coincidental frequency methods.

Based on our assumption that the pumps will not have a significant impact on the resulting backwater elevations for the base flood event, detailed analysis and inspection of the three pumps necessary to be considered for certification is not included in this agreement. Analysis of these three interior drainage systems will be completed with and without the pumps, if it's considered the inclusions of the pumping benefits is critical to the performance of the interior drainage systems, a supplemental agreement will be necessary to include detailed analysis and inspection of the pump systems, per COE guidelines.

Independent QA of Interior Drainage System Hydraulics is included.

II.D. Embankment Protection Analysis Models

River scour analyses shall be completed where visual assessment or maintenance records indicate it is appropriate, or where engineering judgment warrants. In this case, locations at the outlet of four interior drainage structures have been identified where it's believed scour potential is the highest. A scour analysis will be performed at these 4 locations. The scour analysis will be completed assuming erosion sources for both interior drainage structure exit velocity and 1% chance river flow velocities. If deficiencies are identified, two additional locations identified may require analysis as well. This agreement only includes four initial locations, which are anticipated to be the only locations necessary for analysis. If additional locations are required, a supplemental agreement will be necessary to include additional fee.

An independent review of Embankment Protection is included.

II.E. Geotechnical Analysis (Stability, Settlement, Seepage, and Seismic Analyses) for Embankments and Floodwalls

The geotechnical assessment will involve utilizing existing data and the data (if provided) and the data developed to evaluate the geotechnical slope and foundation stability of the subject system. Where sustained water flow levels indicate that embankment or foundation seepage could be problematic, seepage analysis will be performed using SEEP/W, a finite element software program that can perform both transient and steady-state seepage modeling.

Slope stability of levee embankments will be performed utilizing SLOPE/W, a computer program that can perform a variety of limit equilibrium stability analysis methods (Bishops, Janbu, Morgenstern-Price, etc.) under both static and pseudo-static loading conditions. Slope stability will be evaluated in accordance with the methodology outlined in USACE Engineering Manual EM 1110-2-1913. Long-term settlement potential of levees will be evaluated by a method appropriate to the subsurface conditions including Standard Penetration Test (SPT)

correlations as well as consolidation analysis. Seismic evaluation will be based upon parameters included in IBC 2006. Floodwalls will be evaluated to determine whether they are capable of providing protection against the design flood. A report documenting findings shall be included.

Based on historical document review, subsurface exploration, laboratory testing, and our experience, we will segment the levee system into similar reaches, with respect to subsurface conditions and levee geometry. A typical section will be developed from each reach and will be evaluated in light of the following load cases and failure modes:

Typical sections will be analyzed for each of the following cases:
- Peak flood pool
- Steady state normal pool
- Rapid draw-down
- Earthquake at normal pool

Flood Wall Critical Sections: Perform sufficient analysis to determine factor of safety against the following failure modes:
- Overturning
- Sliding
- Foundation Bearing Capacity
- Global Stability
- Liquefaction

Earthen Levee Critical Sections: Perform sufficient analysis to determine factor of safety against the following failure modes:
- Global stability
- Liquefaction
- Foundation bearing capacity

Seepage Analysis for Flood Walls and Earthen Levees: Analyze each critical section relative to:
- Steady state or transient seepage at normal pool elevation
- Steady state or transient seepage at flood pool elevation

*Note: Transient analysis requires both flood height and duration by provided by H & H analyses.

An independent QA review of Geotechnical Analysis is included.

<u>Report of Findings</u>

A report of findings shall be provided. The report shall include a FEMA submittal letter, a summary and findings for each of the Phase II scope items, the levee forms (MT-2 FEMA Form 3 “Riverine Hydraulic Structures”), Phase I Summary of Findings (attached), and all supporting data necessary to satisfy FEMA 44 CFR 65.10 requirements.

If the levee system does not meet the requirements of FEMA 44 CFR 65.10, the report will provide a description of the deficiencies and recommended improvements to correct the deficiencies. If necessary, ENGINEER will work with CITY and FEMA to develop a schedule of

levee upgrades and improvements to meet FEMA requirements. The ENGINEER can also provide any necessary design services for levee system improvements.

Final Compliance Report

The format and included data will be a result of the continuous coordination with FEMA Region VII and USACE Tulsa District as the exact format of submittal is dynamic as the PAL Levee Certification process is evolving. The ENGINEER will provide required submittal data in the format required at the appropriate time.

If it's determined additional borings are needed (than included herein) to sufficiently characterize the levee system, additional analysis will be required and the ENGINEER's fee shall be adjusted accordingly with a written supplemental agreement, approved by CITY.

Toe Drain Smoke Test

Engineer shall conduct a toe drain smoke test to search for deficiencies in existing toe drains. A test summary shall be provided. Engineer shall coordinate smoke test schedule and access with CITY prior to commencing.

Task III. Additional Assessment Requirements

III.A. Operation and Maintenance Criteria and Manuals

The existing operation and maintenance plan will be updated and a digital operation plan will be developed that can be easily maintained, distributed, and implemented. The plan will address such operational items as settlement, scour along the levee toe, erosion on the dry side, evidence of through seepage, traffic gap closures, control structures, etc.

The plan will be similar to those produced for other levee systems within FEMA Region VII and USACE Kansas City district. The plan will have a general operation section and then incremental levee system sections. For example: the general criteria applies to the overall system, but the specific section would apply to a particular area where maybe a closure structure needs to be installed. This organization of the plan provides easy training and implementation by providing specific instructions to the staff/employees that have specific responsibilities during an event.

III.B. Certified Levee As-Is Drawings

FEMA concedes that As-Built drawings are not applicable for aged levee systems, especially those that have experienced maintenance activities and significant changes near the toes, dry side pools, and tie-ins to roadway improvement projects. Instead, an "As Is" plans illustrating the existing conditions of the levee system will be developed to supplement the as-built plans required in FEMA 44 CFR 65.10. The "As Is" plans shall be completed in a manner that can be easily reviewed and updated for future levee assessments. They shall include aerial photo based plan sheets illustrating levee alignment, outfall structures, boring locations, major utilities potentially impacting levee stability, elevation contours, etc. Profile sheets shall be included illustrating the following profiles: top of levee, base flood, stream flowline, roadway closures, boring logs, major utilities potentially impacting levee stablility, etc.

III.C. Final Walk Through

A final levee walk through shall be completed by ENGINEER. 2 PE's from Wilson & Company and 1 PE from AMEC shall attend. The walk shall be completed in one day.

III.D. Client Meetings & Coodination

Throughout all phases of the project, ENGINEER shall conduct a sufficient amount of face to face meetings, teleconference meetings and progress report to ensure proper coordination with CITY.

ENGINEER shall have 3 representatives attend one meeting in Osawatomie during the project. Each meeting includes approximately 4 hours for the meeting, preparation and travel.

PROJECT SCHEDULE

Based on input from FEMA, we propose the following Project Schedule:

Notice to Proceed	July 25, 2009
Ground Surface Elevation Data Available from USGS or FEMA:	June, 2010
Updated Hydrology & Hydraulic Analysis Available from FEMA:	Nov, 2010
Phase II Draft Report Submittal Date:	Mar, 2011
Completion of Construction Necessary for Certification: (if any is necessary)	Mar, 2012
Phase II Completion Date:	Mar, 2012

ENGINEER shall not be held responsible for delays caused by receiving late or inadequate submittals from USGS or FEMA.

According to FEMA, the latest possible PAL documentation submittal date prior to updated Flood Insurance Rate Maps becoming effective without flood protection from the Osawatomie Levee System is April 2012. FEMA anticipates the updated FIRM's will become effective in August 2012.

SUBMITTALS

Paper and electronic data shall be submitted as necessary to provide sufficient documentation of levee assessment for CITY records and to satisfy FEMA PAL requirements.

ASSUMPTIONS

This scope is based on the following assumptions:

1. Costs associated with design services required for rehabilitation of deficient areas are beyond the scope of these services.

2. CITY will provide video inspection documentation of levee outfall drainage structures.

3. CITY will provide access as necessary to complete all scope items.

4. CITY will provide all CITY records and information pertaining to the project if determined beneficial by Engineer.

5. No special permits are required for subsurface exploration. If required, CITY will provide permits at no cost to Engineer.

6. No toe drains are believed to exist on the levee system.

7. City shall provide pump capacity rating curves and other available information for the three permanent pump systems and 2 temporary pump systems.

8. Scope items included herein shall be completed to current FEMA guidelines. Additional analysis or data collection necessary to satisfy new or additional requirements after the date of this agreement are not included herein. FEMA LOMR application services are not included herein.

COST PLUS FEE SUMMARY				
		WCI Fee	**Subconsultant**	**Total Cost Plus**
Scope Item	Task Description	Base	Fee Base	**Fee Base**
I.	**Data Collection**			
I.A.	1. QA & Coordination w/ USGS for Lidar Ground Surface Elevation Data	2,730.00	0.00	**$2,730.00**
	2. Field Survey Services	22,730.00	0.00	**$22,730.00**
II.	**FEMA Design Criteria Assessment**			
II.A.	Geotechnical Exploration (Base - 23 Borings, 45' deep)	1,680.00	71,990.00	**$73,670.00**
II.B.	Hydrologic Studies			
	1. River Hydrology - FEMA QA (Marais des Cygnes & Pottawatomie)	0.00	3,200.00	**$3,200.00**
	2. Interior Drainage Hydrology (21 outfalls)	34,310.00	2,855.00	**$37,165.00**
II.C.	Hydraulic Studies			
	1. River Hydraulic Modeling - FEMA QA (Marais des Cygnes & Pott. Cr)	0.00	5,010.00	**$5,010.00**
	2. Freeboard Analysis	12,520.00	1,500.00	**$14,020.00**
	3. Interior Drainage System Hydraulics (21 outfalls)	37,900.00	2,500.00	**$40,400.00**
II.D.	Embankment Protection Analysis Models	1,090.00	13,375.00	**$14,465.00**
II.E.	Geotechnical Analysis (Embankments & Floodwalls)			
	1. Stability, Seepage and Seismic	1,730.00	24,400.00	**$26,130.00**
	2. Settlement Analysis	860.00	4,070.00	**$4,930.00**
III.	**Additional Assessment Requirements**			
III.A.	Operation and Maintenance Criteria and Manual Update	18,280.00	1,500.00	**$19,780.00**
III.B.	Certified As-Is Drawings	15,110.00	1,500.00	**$16,610.00**
III.C.	Final Walk Through	4,250.00	1,540.00	**$5,790.00**
III.D.	Client Meetings (Preparation & Attendance) (3 PEs) (1 meeting)	1,880.00	1,265.00	**$3,145.00**
TOTAL ESTIMATED FEE - PHASE II		$155,070.00	$134,705.00	**$289,775.00**

PHASE I PROJECT COST	47,000.00
TOTAL ESTIMATED PROJECT COST	$336,775.00

Levee Length = 26,500' = 5.0 mi

No. of Outfall Structures = 15

No. of Stoplog Closures = 5

CITY OF OSAWATOMIE

LEVEE ACCREDITATION

WILSON & COMPANY amec

June 2009

0 500 1,000 Feet

Legend

- Coverage Needed for 2' Contour Ground Surface Data
- 0 Bridges to be Surveyed & Modeled
- Ottawa Levee
- FEMA Zone AE
- FEMA Zone A
- City Limits

Figure 1