

**FIFTEENTH AMENDMENT
TO
AGREEMENT FOR PROFESSIONAL SERVICES
BETWEEN
THREE RIVERS LEVEE IMPROVEMENT AUTHORITY
AND
HDR ENGINEERING, INC.**

THIS FIFTEENTH AMENDATORY AGREEMENT is made and entered into this 7th day of May 2013, by and between the Three Rivers Levee Improvement Authority, (“TRLIA”), a California Joint Powers Authority, and HDR Engineering, Inc. (“CONSULTANT”).

WHEREAS, TRLIA and CONSULTANT entered into an agreement on December 13, 2005 to provide professional services for Engineering Design and Environmental Studies for Phase 4 Levee Repairs - Upper Yuba River, Continuation of Phase 2 Construction Management (2006), and FEMA Certification of Contract Work (“Agreement”);

WHEREAS, a FIRST AMENDATORY AGREEMENT, executed February 14, 2006, increased the maximum not to exceed contract fee from \$2,580,038 by \$118,955 to \$2,698,993; and

WHEREAS, a SECOND AMENDATORY AGREEMENT, executed March 7, 2006, increased the maximum not to exceed contract fee from \$2,698,993 by \$117,649 to \$2,876,642; and

WHEREAS, a THIRD AMENDATORY AGREEMENT, executed August 8, 2006, increased the maximum not to exceed contract fee from \$2,876,642 by \$661,193 to \$3,537,835; and

WHEREAS, a FOURTH AMENDATORY AGREEMENT, executed October 16, 2007, increased the maximum not to exceed contract fee from \$3,537,835 by \$280,000 to \$3,817,835; and

WHEREAS, a FIFTH AMENDATORY AGREEMENT, executed August 5, 2008, increased the maximum not to exceed contract fee from \$3,817,835 by \$954,524 to \$4,772,359; and

WHEREAS, a SIXTH AMENDATORY AGREEMENT, executed September 9, 2008, extended the time of services rendered to December 31, 2009; and

WHEREAS, a SEVENTH AMENDATORY AGREEMENT, executed May 12, 2009, increased the maximum not to exceed contract fee from \$4,772,359 by \$2,416,874 to \$7,189,233 and extended the time of services rendered to December 31, 2010; and

WHEREAS, an EIGHTH AMENDATORY AGREEMENT, executed September 15, 2009 increased the maximum not to exceed contract fee from \$7,189,233 by \$155,846 to \$7,345,079; and

WHEREAS, a NINTH AMENDATORY AGREEMENT, executed July 20, 2010 increased the maximum not to exceed contract fee from \$7,345,079 by \$1,473,064 to \$8,818,143; and

WHEREAS, a TENTH AMENDATORY AGREEMENT, executed August 12, 2011 increased the maximum not to exceed contract fee from \$8,818,143 by \$162,879 to \$8,981,022; and

WHEREAS, an ELEVENTH AMENDATORY AGREEMENT, executed October 18, 2011 increased the maximum not to exceed contract fee from \$8,981,022 by \$636,668 to \$9,617,690; and

WHEREAS, a TWELFTH AMENDATORY AGREEMENT, executed February 21, 2012 increased the maximum not to exceed contract fee from \$9,617,690 by \$50,000 to \$9,667,690 and extended the contract date to December 31, 2013; and

WHEREAS, a THIRTEENTH AMENDATORY AGREEMENT, executed September 18, 2012 increased the maximum not to exceed contract fee from \$9,667,690 by \$59,762 to \$9,727,452; and

WHEREAS, a FOURTEENTH AMENDATORY AGREEMENT, executed October 24, 2012 increased the maximum not to exceed contract fee from \$9,727,452 by \$29,873 to \$9,757,325;

and

WHEREAS, Article C.24 of the AGREEMENT, states that modifications or amendments to the terms of the AGREEMENT shall be in writing and executed by both parties; and

WHEREAS, TRLIA and CONSULTANT desire to amend Agreement;

NOW, THEREFORE, TRLIA and CONSULTANT agree as follows:

1. Exhibit A of AGREEMENT shall be amended to perform those additional services as described in Exhibit A to this FIFTEENTH AMENDMENT.
2. Attachment B, Provision B.1 of the Agreement shall be revised to increase the maximum not to exceed contract fee by \$625,084 from \$9,757,325 to \$10,382,409.

All other terms and conditions contained in AGREEMENT shall remain in full force and effect.

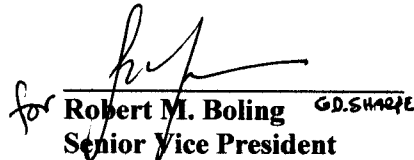
This Amended agreement is hereby executed on this 7 day of MAY, 2013.

THREE RIVERS LEVEE
IMPROVEMENT AUTHORITY

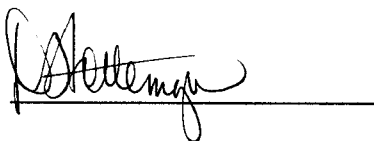


Paul G. Brunner
Executive Director


HDR ENGINEERING, INC.

for 
Robert M. Boling G.D. SHARPE
Senior Vice President

ATTEST:
DONNA STOTTEMAYER
CLERK OF THE BOARD



APPROVED AS TO FORM:


SCOTT L. SHAPIRO
GENERAL COUNSEL

SCOPE AND FEE ESTIMATE FOR ENGINEERING DESIGN SERVICES

(Amendment No. 15)

Three Rivers Levee Improvement Authority

Yuba County, California

**Geotechnical Services for the Western Pacific
Interceptor Canal – 200 Year Urban Levee Design
Criteria**

March 18, 2013



2365 Iron Point Road, Suite 300
Folsom, CA 95630

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Introduction

HDR Engineering, Inc. (HDR) is currently under contract with the Three Rivers Levee Improvement Authority (TRLIA) in Yuba County, CA to provide the information necessary to pursue a State of California Department of Water Resources (DWR) compliance determination in accordance with the Draft May 2012 Urban Levee Design Criteria (ULDC) for the Western Pacific Interceptor Canal (WPIC) West levee and the eastern portion of the Bear River North levee.

Review of new data and subsequent analysis conducted as part of the initial stages of ULDC analyses, HDR has found that portions of the levees do not meet ULDC levee design criteria. HDR has determined that additional geotechnical data and analyses are required to better define controlling features and the limits of potentially deficient areas. As part of the initial analyses HDR was requested to review the DWR/URS Urban Levee Geotechnical Evaluation (ULE) analyses of the WPIC West Levee and summarize comments in a technical memorandum (TM). In addition, engineering support to evaluate remedial measures for drainage concerns along the WPIC has been requested.

The scope of services is outlined below.

Scope of Work

The tasks outlined in this scope have been prepared based on discussions with MBK Engineers (MBK) and includes the following effort:

- Review the DWR/URS ULE analyses of the WPIC and include HDR's opinions in a TM.
- Perform additional targeted geotechnical exploration, laboratory testing, and analyses. Prepare a TM summarizing current analyses, a Geotechnical Data Report, an Alternatives Analysis and a draft Geotechnical Basis of Design Report.
- Local drainage evaluation and access road design.

Task 1 Project Management

The project management task includes time necessary for coordination with TRLIA and other members of the project team, as well as time needed for preparing progress reports and other management tasks.

Task 2 Geotechnical Services

2.1 Review of DWR/URS ULE Analyses

At the request of MBK, HDR has reviewed the DWR/URS ULE analyses on existing conditions on the WPIC West Levee. HDR reviewed the details of model input including

topography, stratigraphy, WSE, and the results of their seepage and stability analyses. A draft TM was produced summarizing HDR's findings and opinions on applicability and refinements.

2.2 Technical Memorandum - Current Analyses

HDR will prepare a TM to summarize the result of HDR's current seepage and stability analyses of the WPIC and Bear River North levees studied. The TM will be based on the currently-available subsurface data, topography, and WSEs and would include results related to criteria, and initial estimate of limits of potentially deficient reaches, and remedial concepts.

2.3 Exploration and Testing

In order to support the findings pertaining to ULDC criteria and move the project to final design, additional exploration and testing is necessary. The exploration and testing would provide data to:

- Confirm blanket layer thicknesses and material classifications along the landside of the levees where modeling has indicated that underseepage is of concern.
- Verify embankment material properties where through seepage and slope stability has been identified as a concern.
- Collection of additional data to confirm embankment and foundation conditions where no remediation is anticipated.
- Aid in defining lateral limits of remediation.
- Evaluate backfill soils properties at the three identified penetrations.

HDR's proposed exploration program consists of permitting and completing up to 26 borings and 7 CPTs to depths of 20 to 65 feet deep along the levee crown and near the landside toe. Samples in boring would be collected at about 2½-foot intervals to about 20 feet below the toe and 5 feet thereafter. Eight to twelve shallow test pits along the landside slope or toe will be excavated by hand. In addition, three borings and six shallow test pits (one at each end) will be performed over the three identified levee penetrations using a backhoe.

Laboratory testing will be performed on select materials from the borings and hand excavations and could consist of, as appropriate: sieve analyses, Atterberg limits, moisture content/dry density, triaxial shear, direct shear, unconfined compression, consolidation, permeability, compaction, corrosion, and R-value.

2.4 Geotechnical Data Report

A Geotechnical Data Report will be prepared to compile both the subsurface data used as the basis of HDR's recent evaluations evaluation and the explorations proposed herein into a single document that can be incorporated into final design documents.

2.5 Geotechnical Alternative Analysis

Additional geotechnical evaluations, including seepage, stability, and settlement analyses will be performed in accordance with the project Technical Approach document, the ULDC guidance, and as explained in HDR's previous scope. Three additional cross-sectional models (with sensitivity variations) based on the current data will be evaluated. In addition, once the additional geotechnical data is collected, six cross-sectional models (with sensitivity variations) will be evaluated to verify recent model results, evaluation of penetrations, and to assist in determining limits of potential remediation need. Select remedial alternative measures will be evaluated to demonstrate that they will meet the project (and ULDC) design criteria. Up to 2 remedial measures will be evaluated at each reach found not meeting project criteria. The results of these analyses will be summarized in an Alternative Analysis report.

2.6 Draft Geotechnical Basis of Design Report

A draft Geotechnical Basis of Design Report will be prepared once remedial alternatives are selected. The Report will include design-level recommendations and preliminary design details.

2.7 Meetings

Ten meetings at MBK's office will be necessary through this scope.

2.8 Deliverables

- ◆ Exploration Map
- ◆ Technical Memorandum – Results of Analyses based on current data (draft and final)
- ◆ Geotechnical Data Report (draft and final)
- ◆ Alternative Analysis Report (draft and final)
- ◆ Draft Geotechnical Basis of Design Report

Assumptions

- ◆ MBK will provide all rights of entry for exploration program and other site visits.
- ◆ The 500-year WSE and 200-year hydrograph for the WPIC and Bear River are provided or will be provided by MBK.
- ◆ A meeting(s) will be held to discuss feasibility of potential alternatives. TRLIA will choose a preferred alternative for each deficient area.
- ◆ Final Geotechnical Basis of Design will be completed as part of the final design of the WPIC.
- ◆ RD 784 will provide a backhoe for the shallow test pit exploration and will backfill each excavation.

Task 3 Drainage Evaluation and Access Road

3.1 Drainage Study

The existing local drainage will be studied along the landside of the WPIC west levee. Current capacities and gravity discharge locations will be identified. Considering the potential geotechnical remediations, drainage of the chosen remediated conditions will be evaluated. Any impacts will be mitigated through design.

3.2 Access Road

TRLIA and USACE have noted that ponding during wet weather prevents passage along the landside toe of the WPIC and also hinders inspections during high water. HDR will prepare a preliminary design to provide a toe access road that will be drivable during wet weather. This road will extend from the WPIC juncture with the Bear North Levee upstream to Highway 70. This will most likely include fill to provide an elevated roadway along the levee toe. Local drainage will need to be evaluated to ensure that any impacts on local drainage are mitigated.

3.3 Deliverables

- Draft and final Drainage Study
- Preliminary design and location of 3 access road locations.

Assumptions

- Due to the changes in topography (Hwy 70 relocation, new housing development), TRLIA surveyors will provide updated topography along the WPIC.

Task 4 Engineer's Estimate

Based on the geotechnical analysis, a preliminary cost estimate of each alternative will be presented. Civil, geotechnical, real estate and environmental will be considered in each estimate.

4.1 Deliverables

- ◆ Engineer's Estimate for each alternative (draft and final).

4.2 Assumptions

It is assumed that TRLIA's real estate and environmental teams will provide unit costs for the necessary lands and mitigation needed for the alternatives.

Task 5 Schedule

Task Description	Completion Date
Task 1 - Project Management	Throughout Project
Task 2 – Geotechnical Services	
2.1 – Review of DWR/URS ULE Analyses	NTP + 30 days
2.2 – Technical Memorandum – Current Analysis	NTP + 3 weeks*
2.3 – Exploration and Testing	Exploration Map – NTP + 1 week Field Exploration – NTP + 15 weeks Lab Testing – 5 weeks after field exploration completed
2.4 – Geotechnical Data Report	NTP + 25 weeks (draft) NTP + 29 weeks (final)
2.5 – Geotechnical Alternative Analysis	NTP + 35 weeks (draft) NTP + 39 weeks (final)
2.6 – Draft Geotechnical Basis of Design	NTP + 45 weeks (draft) NTP + 49 weeks (final draft)
2.7 – Meetings	Throughout Project
Task 3 – Drainage Evaluation and Access Road	
3.1 Drainage Study	NTP + 16 weeks (draft) NTP + 20 weeks (final)
3.2 Access Road	NTP + 20 weeks (draft) NTP + 24 weeks (final)
Task 4 – Engineer’s Estimate	
4.1 Deliverables	NTP + 45 weeks (draft) NTP + 49 weeks (final)

Notes:

- ◆ A 10 working day review of significant design deliverables will be conducted by TRLIA and other agencies. At the end of the review period, a review meeting may need to be held with the reviewers to discuss comments.
- ◆ Right of Entry and Permitting could delay schedule.
- ◆ *Will need revised water surface elevation along the Bear River prior to completing task.
- ◆ Drainage Study and Access Road tasks can be accomplished earlier if TRLIA desires. Additional survey or conversion of datum will be required.

TRLIA - Geotechnical Services for the WPKC
March 18, 2013

No.	Task Description	TRLIA 200 Year Urban Levee Design Criteria (ULDC) Determination										Total Labor (\$)	Expenses	10% Markup on ODC's	Subconsultants	Total	
		Project Manager	Senior Geotech	Staff Geotech	Senior Civil	Staff Civil	Senior Geotech	Staff Geotech	Senior Civil	Staff Civil	Senior Geotech						Staff Geotech
Task 1 Project Management																	
1	Project Management	230	220	190	130	130	120	100	100	100	100	100	100	100	100	100	100
Total Task 1		56	0	40	0	0	0	0	0	88	12	88	12	196	2,438	244	38,162
Task 2 Geotechnical																	
2.1.2	DWRURS ULE Review	18	35	76												164	22,293
2.1.3	PM of Current Analysis	4	12	24												50	6,833
Total Task 2		56	0	40	0	0	0	0	0	88	12	88	12	196	2,438	244	38,162
Task 3 Drainage Evaluation and Access Road																	
3.1	Drainage Study	18	135	405	1,062	0	0	162	52	0	1,834	0	0	0	0	2,186	243,609
3.2	Access Road	4	4	12	24	8	64	40	124	0	116	12	60	40	124	126	17,190
3.3	Draft Drainage Report	2	2	4	8	4	8	12	8	4	34	4	8	12	8	360	4,896
Total Task 3		24	141	426	1,100	12	72	52	64	4	184	16	72	52	210	308	41,886
Task 4 Engineer's Estimate																	
4.1	Deliverables	2	2	4	8	4	8	12	8	4	34	4	8	12	8	360	4,896
Total Task 4		2	2	4	8	4	8	12	8	4	34	4	8	12	8	360	4,896
TOTAL EFFORT		89	135	451	1,064	36	146	258	156	12	2,369	28	146	156	210	\$243,609	\$625,034