Memorandum

To: Programs, Projects and Operations Subcommittee
Re: Phase 2 Contract for Engineering Services with HDR Engineering, Inc. for WP5
Date: March 1, 2010
From: Amanda Grint, Water Resources Engineer

In December 2008, the Board approved the selection of HDR Engineering, Inc. (HDR) for professional services for the planning, permitting, design and construction of West Papillion Regional Basin Number 5 (WP5). The work was planned to be completed in three phases. Phase 1 provided the feasibility and preliminary design of WP5. An update of the progress will be reported at the Subcommittee meeting. Scope and fees for Phase 2, Final Design and Bidding are presented for consideration. Phase 3, Construction Administration, will be presented at a later date.

A summary of the tasks for Phase 2 is as follows:

- Project Management tasks include progress reports, coordination meetings, a newsletter update and a presentation to the Board.
- Preliminary Design of Lincoln Road and bridge crossing includes evaluating four bridge and trail options for cost and feasibility. The task includes geotechnical work to analyze bridge foundation design and coordination to develop layout and design of Lincoln Road with Sarpy County and Papillion.
- Permit coordination for the USACE 404, Nebraska Department of Natural Resources Permit to Impound Water, NPDES Stormwater permit, and assist with floodplain permit and revision process.
- Prepare final design plans, specifications and estimate of construction cost for dam, roadway, bridge, trail, recreation features, in-lake features, utilities and water quality basins
- Prepare Emergency Action Plan (EAP) for dam
- Provide survey services to create necessary easements for mitigation sites, utility corridors, and roadway. Task includes a final boundary survey of the project property.
- Bidding Services

In conclusion, HDR would provide the professional services noted above for Phase 2 of the WP-5 project, Final Design and Bidding, on an hourly basis not to exceed the amount of $817,700.

- Management recommends that the Subcommittee recommend to the Board that the General Manager be authorized to execute the enclosed Professional Services Agreement between the District and HDR Engineering, Inc. for Phase 2 Services for the WP-5 Project in an amount not to exceed $817,700, subject to changes deemed necessary by the General Manager and approved as to form by District Legal Counsel.
AMENDMENT TO OWNER-ENGINEER AGREEMENT
Amendment No. 1

1. Background Data:

   a. Effective Date of Owner-Engineer Agreement: February 3, 2009
   b. Owner: Papio-Missouri River Natural Resources District (P-MRNRD)
   c. Engineer: HDR Engineering, Inc. (HDR)
   d. Project: WP-5 Flood Control Facility

2. Description of Modifications:

   a. The Scope of Services currently authorized to be performed by Engineer in accordance with the Agreement and previous amendments, if any, is modified as follows:

      1) Per Exhibit A, Part 1.A1.02 of the original agreement, the scope of services for Phase II, including final design and bidding assistance services is included as Attachment 1 to this amendment.

   b. For the Phase II services set forth above, Owner shall pay Engineer the following additional compensation:

      1) An amount equal to Engineer’s Direct Labor Costs times a factor of 3.15 for the services of Engineer’s employees engaged on the Project, plus Reimbursable Expenses, provided however, and notwithstanding anything to the contrary contained in this Agreement, the total amount of money due to ENGINEER for such services and for Reimbursable Expenses and Engineer’s Consultant’s charges shall not exceed the amount of $817,700.00 unless an additional payment for the services, expenses, or charges resulting in such excess is authorized in writing by Owner in advance of such services, expenses or charges being furnished, expended, or incurred, the amount of $817,700 being intended by the parties as the maximum amount of money to be due to the Engineer under this Amendment for Phase II services.
c. The schedule for rendering services is included as Attachment 3 to this amendment.

Attachment 1  WP-5 Phase II Scope of Services  
Attachment 2  WP-5 Phase II Fee  
Attachment 3  WP-5 Phase II Schedule

3. Agreement Summary (Reference only)  
   a. Original Agreement amount: $529,000  
   b. Net change for prior amendments: $-  
   c. This amendment amount: $817,700  
   d. Adjusted Agreement amount: $1,346,700

The foregoing Agreement Summary is for reference only and does not alter the terms of the Agreement, including those set forth in Exhibit C.

Owner and Engineer hereby agree to modify the above-referenced Agreement as set forth in this Amendment. All provisions of the Agreement not modified by this or previous Amendments remain in effect. The Effective Date of this Amendment is ____________.

OWNER: ____________________________________________________________________________

By:  John Winkler  
Title:  General Manager  
Date Signed: _____________________________

ENGINEER: ____________________________________________________________________________

By:  Matthew Tondl, P.E.  
Title:  Senior Vice President  
Date Signed: _____________________________
Attachment 1 – Scope of Services

Regional Detention Basin WP-5
for Papio-Missouri River Natural Resources District
Sarpy County, NE

ENGINEERING PROPOSAL – PHASE II FINAL DESIGN SERVICES

BACKGROUND AND BASIS OF PROPOSAL

HDR Engineering, Inc. was selected by the P-MRNRD to provide planning, permitting, preliminary and final design and construction contract administration services for WP-5. WP-5 is a proposed regional detention basin to be located on an unnamed tributary to West Papillion Creek located in Sarpy County and is located near 126th and Cornhusker Road in Papillion, Nebraska. The contributing drainage area at the proposed detention basin is approximately 5.2 square miles. The drainage area of WP-5 is primarily agricultural land with minimal development.

To more concisely respond to project requirements, a phased approach is proposed. In Phase I, a feasibility study and preliminary design has been conducted to define the details of the project. Phase II generally including preparing final design documents and providing bidding assistance, while Phase III will consist of construction contract administration services.

This Scope of Services is to document Phase II professional services to the Papio-Missouri River NRD (P-MRNRD) for the final design of WP-5 (Project).

SCOPE OF SERVICES – PHASE II – FINAL DESIGN

HDR will perform preliminary and final design services. The Phase II scope of work is segmented into eleven (11) task series:

Task Series 100 – Project Management
Task Series 200 – Lincoln Road Roadway and Bridge Preliminary Design
Task Series 300 – Permitting
Task Series 400 – Interim Contract Document Preparation
Task Series 500 – Dam and Roadway (Non-Bridge) Final Contract Document Preparation
Task Series 600 – Bridge Final Design Document Preparation
Task Series 700 – Design Documentation Report
Task Series 800 – Emergency Action Plan
Task Series 900 – Survey
Task Series 1000 – Bidding Services

The HDR Team proposes to provide the following professional services for Phase II over an anticipated eight (8) - month project period from the time of contract authorization.

TASK SERIES 100 PROJECT MANAGEMENT

Task Objective: Confirm that Project elements are being completed.

HDR Activities:

Task 110 Project Management. Includes Project scheduling, administration and coordination activities on the Project. Internal HDR Project Team meetings will be conducted to discuss tasks, provide Project updates and review deliverables. Prepare monthly invoices and progress reports.

Task 120 Coordination Meetings. Coordination meetings will be conducted with P-MRNRD during the Project. An agenda will be prepared prior to the meeting and meeting minutes prepared after the meeting.

120.1 P-MRNRD Coordination Meetings. Meet with P-MRNRD personnel to review and discuss Project progress. Assume a total of 6 meetings.

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(Attachment 1 – Scope of Services)
120.2 Board/Subcommittee Presentation. Conduct 1 presentation to the P-MRN RD Board/Subcommittee to provide the results of the final design. A PowerPoint presentation will be prepared. One preparation meeting for the presentation is assumed.

Task 130 Newsletter Update. The HDR Team will create an electronic 2-page update on the Project to be posted on the P-MRN RD’s and/or City of Papillion’s websites. One newsletter will be prepared.

Task Deliverables:
- Monthly invoices and progress report
- Meeting agenda and minutes
- PowerPoint presentation for P-MRN RD Board/Subcommittee Presentation
- One newsletter update

Key Understandings:
- The duration of the project is 8 months.
- Meetings will be held at the offices of the P-MRN RD and attended by 2 HDR professionals.
- Six (6) coordination meetings are assumed.
- One (1) P-MRN RD Board/Subcommittee meeting presentation is assumed.

TASK SERIES 200 LINCOLN ROAD ROADWAY AND BRIDGE ALTERNATIVES

Task Objective: Determine a vertical and horizontal alignment of Lincoln Road necessary to span the upper pool of proposed  W P-5. Develop conceptual plans of 4 alternatives for the crossing structure: 1) Single span with trails under bridge; 2) 3-span with trails under bridge; 3) 3-span with 2 box culvert trail crossings; 4) 3-span with 2 bridge trail crossings. Conceptual plans showing proposed bridge configuration, size, orientation and structure type for each alternative will be prepared.

HDR Activities: Task 210 Roadway and Bridge Coordination. Coordinate with city of Papillion, Sarpy County, and Royals Ballpark consultants on the design of the roadway and bridge. A total of five (5) meetings are planned.

Task 220 Geotechnical Data Collection and Analysis Conduct a subsurface investigation to collect geotechnical information to select type of piles and design pile foundations for bridge. This will include 6 borings advanced into non-yielding material (glacial till or sand). Two (2) of the borings will extend at least 30 feet into the glacial till. A total of 340 linear feet of drilling is estimated, with laboratory testing for bridge foundation design conducted. Geotechnical evaluation will analyze structure foundation capacities for the bridge and embankment stability for the roadway fill sections. Preparation of technical memo documenting geotechnical evaluation.

Task 230 Roadway Alternatives
230.1 Design Criteria. Define design criteria for the roadway. Establish alignment, design speed, and roadway typical grade and pavement section. The current anticipated typical roadway section is a 3-lane urban section with a 10-foot wide sidewalk on both sides. Review existing utilities for any conflicts that may affect design.

230.2 Geometries. Define preliminary centerline profile of Lincoln Road from the proposed roundabout at approximately 126th Street to 132nd & Lynam Streets. Establish horizontal and vertical alignment of Lincoln Road for the design segment. Two horizontal alignments will be investigated.

230.3 Roadway Modeling. Preliminary roadway earthwork modeling will be accomplished using AutoCAD Civil 3D design software.

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(Attachment 1 – Scope of Services)
230.4 Preliminary Drawings. Preliminary drawings shall be prepared as per the Nebraska Department of Roads format. The following roadway drawings will be prepared:
   o Typical Roadway Sections
   o Plan and Profile Sheets (scale 1"= 40’)
230.5 Easements Exhibits. Determine the limits of permanent easement to be controlled by the City of Papillion and Sarpy County for O&M activities.

Task 240 Bridge Alternative Evaluation
240.1 Conceptual Layout of Alternatives. Development of conceptual layout of four bridge alternatives, including plan and profile sketches. Anticipated alternatives are: 1) Single span with trails under bridge; 2) 3-span with trails under bridge; 3) 3-span with 2 box culvert trail crossings; 4) 3-span with 2 bridge trail crossings.

Task 250 Alternative Memo
250.1 Conceptual Cost Opinions. Develop conceptual cost opinions of each road and bridge alternative.
250.2 Alternative Memo. Preparation of technical memo documenting the roadway and bridge alternative evaluations.

Task Deliverables:
- Alternatives Technical Memo
- Geotechnical Evaluation Technical Memo
- Coordination Meeting Minutes

Key Understandings:
- Drafting for the roadway will be AutoCAD, Civil 3D and drafting for the bridge design will be Micro Station, Version J.
- Roadway design is limited to the proposed Lincoln Road alignment from the proposed roundabout at approximately 126th Street westerly to 132nd & Lynam Streets.
- No traffic control/signalization or roadway lighting analysis is included.
- City/County to provide pavement thickness and specifications.
- Lincoln Road will be graded and paved as part of the dam project.
- P-MRNDR currently owns a portion of the land along roadway corridor. P-MRNDR will coordinate with local jurisdictions to provide permanent easement of the roadway/bridge to the local jurisdiction on portions they currently own.
- Two horizontal roadway alignments will be investigated
- Bridge concepts will be developed to be transferable to either horizontal roadway alignment.

TASK SERIES 300 PERMITTING

Task Objectives: To coordinate with permitting agencies, and prepare and submit appropriate permits for the project.

HDR Activities: Task 310 Section 404 Permit
310.1 Agency Coordination. Coordinate with USACE relative to project timeframes, wetland and channel mitigation, and potential changes that occur to the design during final design phase. Coordination with USFWS, EPA, NRCS, and Nebraska Game and Parks Commission relative to in-lake, riparian, wetland, and terrestrial habitat design features on the Project Site as well as natural stream design mitigation.

310.2 Section 404 Additional Alternative Evaluations. During the preparation of the Section 404 Application, EPA and other commenting agencies requested additional alternatives beyond those originally scoped be evaluated as part of the application. The range of alternatives considered for practicability included:

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(Attachment 1 – Scope of Services)
• No Action
• Zoning
• Floodplain Acquisition
• Current Conservation Measures
• Future Conservation Measures
• Wetlands Storage Areas (EPA added)
• Stream Restoration (EPA added)
• Stream Restorations with Wetland Storage (EPA added)
• Inflatable Dams (EPA added)
• Improving Conveyance
• Raising Existing Levees and Bridges

Alternatives carried forward for environmental screening included raising existing levees and bridges and the WP-5 project. Finally, minimization alternatives included:

• WP-5 as a dry detention structure
• Multiple small detention dams within watershed
• WP-5 with a normal pool elevation of 1069

310.3 Stream Mitigation Development. Develop mitigation plan drawings, specifications, and cost estimates for stream channel impacted by the Project. This includes coordination with P-MRNRD relative to the potential mitigation site. It is anticipated that stream mitigation will be approximately 1,300 feet. The following drawings will be prepared:
  o Plan and Profile (2 sheets)
  o Typical Details (1 sheet)
  o Cross Sections (1 sheet)

310.4 Wetland Mitigation Development. Develop mitigation plan drawings, specifications, and cost estimates for wetlands impacted by the project. This includes coordination with P-MRNRD relative to the potential mitigation site. It is anticipated that the wetland mitigation will be approximately 0.5 acres. The following drawings will be prepared:
  o Plan and Profile (1 sheet)
  o Typical Details (1 sheet)
  o Cross Sections (1 sheet)

310.5 Permit Conditions Summary. Summarize permit conditions for inclusion in bid documents for Owner and contractors.

310.6 Baseline Mitigation Monitoring. HDR to establish the baseline mitigation monitoring for the stream and wetlands lost by the project.

**Task 320 NDNR Permits.** Permit Preparation. Prepare documentation to complete a DNR Application for a “Permit to Impound Water” and “Application for Approval of Plans for Dams” for main dam and 2 water quality basins.

**Task 330 NPDES Construction Activity Permit.** NPDES construction activity permit and Papillon/Sarpy County grading permit.

330.1 Agency Coordination. Coordinate with city of Papillion and Sarpy County on preparation of Papillon Creek Watershed Partnership (Partnership) Grading permit.

330.2 Permit Preparation. Prepare drawings, narrative plan, and application, to comply with NPDES stormwater associated with construction activity. Plan drawings include:
  o Stormwater Pollution Prevention Plan Cover Sheet and Notes (1 sheet)
  o Stormwater Pollution Prevention Plan Grading Plan (2 sheets)
  o Stormwater Pollution Prevention Plan Grading and Erosion Control Plan (3 sheets)

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(Attachment 1 – Scope of Services)
Task 340 Floodplain Permit Technical Assistance. Provide technical data to P-MRN RD in FEMA’s map revision process.

Task 350 Roadway Agreement Technical Assistance. Assist P-MRN RD in providing technical information in its preparation of an agreement with NDOR and Sarpy County to occupy its right-of-way.

Task Delivered:
- Section 404 mitigation plan
- NDNR permit applications
- Papillion Creek Watershed Partnership Grading Permit
- Wetland and Channel Mitigation plans
- Floodplain permit technical data
- Supporting information for Sarpy County and NDOR roadway agreements.

Key Understandings:
- Mitigation design for channel and wetlands is limited to one (1) location each. Design of mitigation measures is incorporated into the final bid documents and bid with Project.
- No additional topographic survey or land survey work for additional acquisition for mitigation areas is included in this scope of work.
- Any required tree mitigation will be monitored and developed by P-MRN RD.
- P-MRN RD is responsible for site access and negotiations.
- Assumes no major changes in design that would create the need for a permit amendment or re-evaluation of the 404 permit application.
- P-MRN RD is responsible for payment of permit application fees.
- Assumed mitigation will occur on project lands.

**TASK SERIES 400 INTERIM DESIGN AND CONTRACT DOCUMENT PREPARATION (60%)**

**Task Objective:** To prepare 60% design for dam and roadway (non-bridge) features.

**HDR Activities:**

**Task 410 Water Quality Basin Design** Design efforts for the two water quality basins located upstream of 132nd Street. Nebraska DNR has indicated that the two structures are likely to be classified as dam structures and will need to be designed and permitted individually per minimum state standards.

410.1 Geotechnical Investigation. Conduct a subsurface investigation to collect geotechnical information for the water quality basins. It is assumed that 14 borings (7 each site) will be drilled and laboratory testing conducted.

410.2 Geotechnical Evaluation. Geotechnical evaluation and design of two water quality basins.

410.3 Hydrologic and Hydraulic Design. Conduct hydrologic and hydraulic design of the principal and auxiliary spillways.

410.4 Structural Design of Principal Spillway.

**Task 415 Dam Design.** HDR will perform the final design computations for the WP 5 outlet structure. Guidelines as adopted by the State of Nebraska will be incorporated into this task. The dam is to be designed in accordance with the NRCS publication “Earth Dams and Reservoirs”, Technical Release 60 (TR-60). The principal outlet will be designed for the 100-year event,

415.1 Main Dam Principal Spillway. Finalize design for the type, size and location of the principal spillways. Design elements include:
- Riser Structural Design

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(Attachment 1 – Scope of Services)
- Spillway Hydraulics and Final Reservoir Routing
- Spillway outlet pipe design (surcharge, structural, joint ext., etc.)
- Drawdown outlet design
- Spillway energy dissipater (hydraulic and structural design)

415.2 **Main Dam Auxiliary Spillway.** Final design of auxiliary spillway plan, geometry, profile, and grading plans. Task also includes final hydraulic analysis and spillway erodibility assessment using NRCS SITES program.

415.3 **Dam Embankment Final Design.** Final design of the dam earthen embankment. Design elements to include:
- Wave run-up and shoreline protection
- Time rate of settlement analysis
- Strength gain analysis for staged construction
- Dam instrumentation types and locations
- Define overbuild requirements

415.4 **Quantities and Quantiy Checks.** Compute quantities and quantity checks for pay items.

415.5 **Design Documentation.** Prepare a technical memorandum documenting the dam design.

### Task 420 Trail System and Basic Park Features.

420.1 **Design Criteria.** Define design criteria for the trail design, including typical cross section and grade limitations.

420.2 **Trail Design.**
- 420.2.1 **Geometrics.** Establish horizontal and vertical alignment of the trail.
- 420.2.2 **Trail Modeling.** Trail modeling will be accomplished using AutoCAD Civil 3D design software.
- 420.2.3 **Trail Crossing Design.** Design for three (3) pedestrian trail crossing over reservoir.

420.3 **Park Features.**
- 420.3.1 Layout of proposed basic recreation features per PCWP agreement. (picnic shelters, vault restrooms, parking, and access points)
- 420.3.2 Design of proposed basic recreation features (picnic shelters, restrooms, parking, and access points)

430.4 **Design Documentation.** Prepare a technical memorandum documenting the results of the trail system and basic park features.

### Task 430 In-Lake Features.

440.1 **Agency Coordination.** HDR will coordinate with NGPC on in-lake features.

440.2 **Design Criteria.** Define design criteria for the in-lake features, including typical cross section, locations, grading, etc. to refine concept plan used in 404 permit application.

430.3 **Design.** Prepare design of in-lake features, including boat ramp and dock, for main reservoir pool.

430.4 **Design Documentation.** Prepare a technical memorandum documenting the results of the in-lake features design.

### Task 440 Utility Design.

440.1 **Agency Coordination.** HDR will coordinate with city of Papillion on sanitary sewer design, and Westmont utility staff on waterline coordination.

440.2 **Design Criteria.** Define design criteria for the sanitary and any water system components required.

440.3 **Sanitary Sewer Design.** Final design of sanitary sewer trunk line along the west side of reservoir pool.

440.4 **Westmont Water System.** Analysis to determine potential impact to Westmont water system.

440.5 **Electrical Design.** Solar photovoltaic panels are anticipated at picnic shelters and restrooms (one unit for each combination, two total), boat ramp (2 units), and trail crossing structures (one unit at each). NRD and City of Papillion to specify.

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preferred units. HDR to provide design details, drawings, and specifications for bidding and construction.

440.6 Water Service. Design water service for picnic areas. It is anticipated that one water service line will be designed for the west side of the reservoir, tapping into the MUD water main along 132nd Street. No water service is anticipated at this time on the east side of the reservoir as service is not available adjacent to NRD lands. Design of connection to MUD main will be provided by MUD. Plan and profile of water line will not be prepared.

440.7 Design Documentation. Prepare a technical memorandum documenting the utility design.

Task 450 Roadway Design

450.1 Horizontal and Vertical Control Profiles. Finalize the horizontal and vertical alignments of Lincoln Road to provide for an adequate structure opening for the pool levels and accommodate selected bridge option from Task 200.

450.2 Lincoln Road Storm Drainage. Prepare hydrology and hydraulics design of storm drainage system associated with Lincoln Road improvements. Coordinate storm sewer systems with ballpark development. Design and prepare interim level plans for two storm sewer outlets with energy dissipation. Assume sewer and inlets to be based upon City of Papillion design standards. Assume 2 points of access to south side of roadway will be provided.

450.3 Utility Coordination. Coordinate relocation of overhead power pole at Lynam Drive connection.

450.4 Roadway Modeling. Roadway modeling will be accomplished using AutoCAD Civil 3D design software. Roadway grading plans will be prepared.

450.5 Design Documentation. Prepare a technical memorandum documenting the roadway design.

Task 460 Construction Drawings. Prepare construction drawings for the dam and roadway work. ROW legal descriptions for any additional project lands identified through the 60% design will be prepared. A preliminary drawing list includes:

- Title Sheet (1 sheet)
- General Notes, Legend, Abbreviations, Hydrologic/Hydraulic Data and Quantities (2 sheets)
- Clearing, Grubbing & Removals Plan (2 sheets)
- Main Dam and Auxiliary Spillway Horizontal Control Plan (1"=50', 2 sheets)
- Typical Sections (typical cross section along principal spillway, auxiliary spillway section, 2 sheets)
- Main Dam Grading Plan and Embankment Drain Plan (1"=50', 2 sheets)
- Main Dam Principal Spillway Surcharge Plan and Section (1"=50', 2 sheets)
- Main Dam Details (e.g. embankment drain detail, toe drain detail, slotted drain detail, and cutoff detail, 1 sheet)
- Water Quality Basin 132nd Street North Plan and Details (1"=50', 3 sheets)
- Water Quality Basin 132nd Street South Plan and Details (1"=50', 3 sheets)
- Trail Grading (1"=200', 5 sheet)
- In-Reservoir Fish Habitat (3 sheets)
- Lincoln Road General Layout and Control Data (1 sheet)
- Lincoln Road Typical Sections (1 sheet)
- Lincoln Road Geometrics & Jointing Plan (2 sheets)
- Lincoln Road Plan and Profile (2 sheets)
- Lincoln Road Storm Drainage Plan & Profile (2 sheets)
- Lincoln Road Storm Drainage Details (1 sheet)
- Lincoln Road Signing/ Striping Plan (1 sheet)
- Sanitary Sewer Relocation Plan and Profile (5 Sheets)

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(Attachment 1 – Scope of Services)
• Sanitary Sewer Notes & Details (2 sheets)
• Instrumentation and Controls (e.g. piezometer, settlement plate, 1 sheet)
• Structural Details (e.g. riser, stilling basin, 10 sheets)
• Miscellaneous Details (trash rack, 3 sheets)
• Dam Cross Sections (every 100’, 6 sheets)
• Parking Lots and Access Road (2 sheets)
• Boat Ramp and Dock (2 sheets)
• Picnic Shelters (2 sheets)
• Vault Bathrooms (1 sheets)
• Trail Crossings (2 sheets)
• Trail/Lincoln Road Lighting (1 sheets)
• Picnic Shelter (2) (2 sheets)
• Water Service (1 sheet)

**Task 470 Specifications.**

470.1 **Front-End Specifications.** Prepare Divisions 0&1 of the contract documents for P-MRNRD review. EJDC General Conditions will be used along with CSI 3-part format specifications.

470.2 **Technical Specifications.** Prepare table of contents for technical specifications for the construction of the dam and roadway.

**Task 480 Opinion of Probable Construction Cost.** Prepare an opinion of probable construction costs.

**Task 490 Independent Reviews**

490.1 **Independent Technical Review (ITR).** Independent Quality Control review to verify design complies with applicable standards, criteria and acceptable practices.

490.2 **Sustainability Review.** Review of design, materials, and construction methods for opportunities and provide recommendations to include sustainable features in accordance with P-MRNRD policies. Included in this effort will be development of a ‘sustainable scorecard’ to record and communicate inclusion of sustainable feature into the project design and maintenance.

**Task 495 Design Meeting.** Conduct a design review meeting with P-MRNRD staff of 60% design drawings, documentation, and cost estimates.

**Task Deliverables:**

- ROW legal descriptions for any additional project lands (see task 1050)
- Design meeting agenda and minutes.
- Interim Construction Drawings and Opinion of Probable Construction Cost (.pdf format and 3 hard copies)
- Design Documentation Report Draft Sections (.pdf format and 2 hard copies)

**Key Understandings:**

- Nebraska DNR has indicated that the two structures are likely to be classified as dam structures and will need to be designed and permitted individually per minimum state standards.
- EJDC contract documents will be used for the General Conditions.
- Interim design is approximately a 60% design.
- Interim construction drawings will be half-size (11” x 17”) drawings.
- Meeting agenda and minutes will be prepared by HDR and reviewed by P-MRNRD.

**TASK SERIES 500 DAM AND ROADWAY (NON-BRIDGE) FINAL DOCUMENT PREPARATION**

**Task Objective:** To prepare final contract documents for dam and roadway (non-bridge project elements).

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(Attachment 1 – Scope of Services)
HDR Activities:

**Task 510 Pre-Final Design.** Perform final design calculations for dam, utilities, roadway and basic park features, and in-lake features.

510.1 **Construction Drawings.** Comments from 60% review comments will be incorporated and pre-final drawings prepared.

510.2 **Front-end and Technical Specifications.** Pre-final specifications for project elements will be prepared.

510.3 **Opinion of Probable Construction Cost.** Opinion of Probably Construction Cost will be prepared based on pre-final design.

510.4 **Deliverables.** Preparation of drawings, specifications, and construction cost opinions.

510.5 **Final Independent Reviews** Independent technical reviews of project elements.

510.6 **Design Meeting.** Review meeting for pre-final design submittal.

**Task 520 Final Design.** Perform final design calculations for dam, utilities, roadway and basic park features, and in-lake features.

520.1 **Final Construction Drawings.**

520.2 **Front-end and Technical Specifications.**

520.3 **Opinion of Probable Construction Cost.**

520.4 **Deliverables.**

**Task Deliverables:**

- Design meeting agenda and minutes.
- Pre-Final and Final Bid Documents and Opinion of Probable Construction Cost (.pdf format and 3 hard copies)

**Key Understandings:**

- HDR to provide 2 half-size drawings and PDF files to the P-MRNRD for submittals.
- Pre-Final and Final construction drawing will be on “D” size sheets (22” x 34”).
- Final design conference will be at approximately a 95% design effort.
- Roadway and bridge will be included as part of the dam project bid-letting.

**TASK SERIES 600 BRIDGE FINAL DESIGN DOCUMENT PREPARATION**

**Task Objective:** Prepare final design for Lincoln Road bridge crossing

**HDR Activities:**

**Task 610 Final Bridge Design.** Perform final design calculations for bridge superstructure, substructure and foundation elements. Develop design sketches to be utilized for final bridge plan production.

610.1 **Construction Drawings.** Prepare construction drawings of selected Lincoln Road crossing structure.

610.2 **Technical Specifications.** Prepare technical specifications for bridge construction documents. Specifications for the bridge construction will be based on NDOR standards.

610.3 **Opinion of Probable Construction Cost.** Construction cost opinions will be prepared for bridge elements.

610.4 **Deliverables.** Preparation of drawings, specifications, and construction cost opinions.

**Key Understandings:** The following assumptions are made:

- Bridge will be a steel plate deck girdor bridge. Drawings for a concrete bridge alternative will not be prepared.
- Design of independent trail crossing at Lincoln Road not included in this scope of services.
- EJDC contract documents will be used for the General Conditions.
- HDR to provide 2 half-size drawing and PDF to the P-MRNRD for submittals.
- Final construction drawing will be on “D” size sheets (22” x 34”).

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• Aesthetics treatments are limited to tinting and form liners and will be determined by Sarpy County, City of Papillion, and NRD.
• Front-end specifications will be prepared under the dam and roadway design tasks

TASK SERIES 700 DESIGN DOCUMENTATION REPORT

Objective: Document the final design process.

HDR Activities: **Task 710 Design Documentation Report** Each design discipline will document design activities for compilation in a Design Documentation Report (DDR) of the project design. The DDR shall contain information necessary to describe and validate the design including: narrative, diagrams or sketches, calculations, computer print-outs, and documentation of all technical review comments and resolution.
- **710.1 Draft Design Documentation Report** Prepare a draft design analysis.
- **710.2 Final Design Documentation Report** Incorporate the comments from the draft design analysis and prepare a final design analysis.

Task Deliverables:
• Draft Design Documentation Report
• Final Design Documentation Report

Key Understandings:
• One copy of a draft design analysis will be submitted for review.
• Two copies of the final design analysis will be submitted.

TASK SERIES 800 EMERGENCY ACTION PLAN

Task Objectives: To prepare an emergency action plan in accordance with NDNR requirements.

HDR Activities: **Task 810 Dam Breach Analysis.** A dam breach analysis will be conducted to define potential inundation areas should the structure fail. The breach routing will extend from the structure downstream to a point where the flood wave water surface has been attenuated below the regulatory 100-yr water surface elevation. The regulatory HEC-RAS will be the basis for the dam breach analysis. Breach modeling will be based on 'no levees' downstream to be consistent with current floodplain mapping. Inundation maps will be prepared as part of the dam breach analysis for inclusion in the Emergency Action Plan.

**Task 820 Draft Emergency Action Plan.** HDR will develop an emergency action plan based on the current NDNR template.

**Task 830 Final Emergency Action Plan.** The draft Emergency Action Plan will be submitted to NDNR with the “Application for Approval of Plans for Dams”. Comments on the EAP from NDNR will be incorporated into a Final Emergency Action Plan.

Task Deliverables:
• Draft Emergency Action Plan
• Final Emergency Action Plan

Key Understandings: Emergency Action Plan to follow NDNR plan template.

TASK SERIES 900 SURVEY

Task Objectives: Provide survey in support of final design activities.

HDR Activities: **Task 910 Additional Field Survey** Topographic surveys for water quality basins (2 locations), channel and wetland mitigation sites, boat ramp site, and at three (3) pedestrian trails crossing over the reservoir.

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(Attachment 1 – Scope of Services)
Task 920 Lincoln Road Survey. Conduct a detailed topographic survey of the proposed roadway/bridge corridor. Survey will extend from 132nd Street to the P-MRNND eastern property limits (approx. 126th Street) and a 300-ft wide corridor along the proposed centerline of the road. Topographic survey of channel configuration at crossing will also be collected.

Task 930 Boring Location Surveys. Survey bore hole locations for six (6) borings for Lincoln Road bridge structure and fourteen (14) borings for the two water quality basins.

Task 940 Boundary Survey of Project Lands. Boundary map of total project lands, including easements, and metes and bounds description of NRD project lands as a single parcel.

Task 950 Legal Descriptions and Documentation. Prepare legal descriptions and documentation (exhibit drawings and legal descriptions) for the following:
- Channel Mitigation easement from NRD to USACE
- Wetland Mitigation easement from NRD to USACE
- Lincoln Road easement to Sarpy County for Lincoln Road
- Sanitary sewer easement to Sarpy County and City of Papillion
- Vacation of ROW along Cornhusker
- Additional project land acquisition documentation for two parcels near 126th St. cul-de-sac
- Easement from Sarpy County for water line crossing under 132nd Street.

Task Deliverables:

- Topographic survey data for WQ basin sites, channel and wetland mitigation areas, boat ramp, and three pedestrian crossing sites
- Topographic survey data for Lincoln Road
- Boring location survey data for Lincoln Road and Water Quality basins
- Boundary Survey of Project Lands
- Legal exhibits and documents as outlined in Task 950

Key Understandings:

- P-MRNND to submit and pay for all documentation and recodation fees.

TASK SERIES 1000 BIDDING SERVICES

Task Objectives: To provide bidding assistance. For purposes of this scope development, it is assumed that one (1) bid package will be prepared.

HDR Activities:

Task 1010 Prepare Documents for Distribution. Prepare contract documents for distribution. Coordinate with reprographic firm as issuing agent for contract documents and issuing addenda as necessary. Reprographic firm will maintain record of plan holders.

Task 1020 Distribute to Reprographic Firm/Plan Houses. Provide electronic and hard copy set of plans and specifications to Plan Houses and to reprographic firm for reproduction. A maximum of three (3) sets to plan houses will be provided.

Task 1030 Addendum Preparation/Distribution. Issue addenda as appropriate to interpret, clarify or expand Contract Documents and to respond to Contractor’s questions.

Task 1040 Pre-bid/Site Showing. Attend pre-bid/site showing hosted by P-MRNND. HDR to prepare agenda and record meeting notes. NRD to distribute record meeting notes.

Task 1050 Bid Opening. Attend bid opening, tabulate Contractor’s project costs and make a recommendation of award.

March 3, 2010
Task Deliverables:
- Project description for advertising
- Three (3) sets of contract documents for plan houses.
- Addendums
- Electronic copy of grading plans (DTM model)
- Pre-bid/Site Showing agenda, record meeting notes.
- Bid tabulation and letter of award recommendation

Key Understandings:
- No mylars will be produced.
- P-MRN RD will be responsible for advertising.
- P-MRN RD will be responsible for arranging pre-bid meeting room.
## ATTACHMENT 2
### PARR-MISSOURI RIVER NATURAL RESOURCES DISTRICT
### FINAL DESIGN OF WPS-3
### FEE ESTIMATE - MARCH 2, 2010

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### Notes
- The total cost includes all necessary fees for project management, design, and construction.
- Sub-contractors are provided as required for specific tasks.

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The table above provides a detailed breakdown of the estimated costs for the PARR-MISSOURI RIVER NATURAL RESOURCES DISTRICT project. Each task is broken down into design, engineering, and construction costs, with an overall total cost at the bottom. The sub-contractor costs are listed separately for each task where applicable.
Future Land Use Development Concept

The Future Development Concept highlights the fine grain of the pedestrian oriented, mixed-use development desired by the participants of the planning process. The mixed-use town center and neighborhood centers are connected to the future lakes and neighborhoods via an interconnected street network and greenways.
WP-5 Water Depths with a Normal Pool at Elev. 1069

Legend
Pool Depth - Elev. 1069
- 0 - 10ft
- 10.1 - 45ft

Water Depths Greater than 10'
Water Depths Less than 10'
Normal Pool Elev. 1069
Top of Dam Elev. 1088

Papillion Creek Watershed
Regional Detention Basin WP-5, Sarpy County
404 Permit Application

DATE
February 2010

FIGURE
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**Total Estimated Construction Cost:** $10,264,800
CONTRACT DRAWINGS FOR

P-MRNRD
WEST
PAPILLION CREEK
BASIN 5
CONCEPTUAL DESIGN PLANS

HDR PROJECT NO. 000000000098326

SARPY COUNTY, NEBRASKA
MARCH 2010

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MARCH 2010
PAPIO - MISSOURI RIVER
NATURAL RESOURCES
DISTRICT

HDR Engineering, Inc.
NOTES:
The following notes are applicable to all concrete structures.
1. Chamfer all exposed concrete edges *::*.
2. Provide *::* fillets at all vertical re-entrant corners and provide *::* justification at construction joints.
3. All anchor bolts and miscellaneous metal anchors shall be located a minimum of *::* from construction joints.
5. Reinforcing bars shall be placed to provide *::* minimum clearance from all embedded miscellaneous metals.
6. All splices shall be located the distance as shown in the table below for the smaller bar in the splice.
7. Pipe collar waterstops shall be continuous Hydrostic C-J-0725-3K as manufactured by Greenline or approved equal and shall be installed in accordance with manufacturers instructions.
8. Reinforcing bars shall be Grade 60.
10. Drilled adhesive anchor bolts may be substituted for cast in place anchor bolts. Subject to review and approval by the engineer.
11. No field welding will be allowed. If required, bolted connections shall be approved by the engineer.

TRASH RACK DETAILS FOR MAIN DAM
PRINCIPAL SPILLWAY INTAKE STRUCTURE

SECTION

Scales: *::* 1 - 8"
OUTLET GENERAL NOTES:

1. PROVIDE A MINIMUM 1'-0" THICKNESS OF GRANULAR BACKFILL BEHIND WALLS AND VENDEWALLS, ON THE SIDES AND UNDER THE SLAB OF THE OUTLET STRUCTURE. EXTEND GRANULAR BACKFILL TO 1' BELOW MINIMUM GRADE.

2. PROVIDE TWO 4'-0" HIGH STEEPED PVC PIPES THROUGH CUTOFF WALL AT BELOW BOTTOM OF THE BASE SLAB AND IMMEDIATELY BELOW THE SLOPE GRANITE PIPES. INSTALL A 1/4" PERFORATED LAYER BOTH ENDS OF PVC PIPES WITH GEOTEXTILE FABRIC AND STAINLESS STEEL SCREEN.

NOTE:
WALL REINFORCING SHOWN IS TYPICAL UNLESS NOTED OTHERWISE.