

Assessor's Parcel Number: N/A

Date: MAY 4, 2018

Recording Requested By:

Name: AUBREY BOUDREAU/COMMUNITY DEVELOPMENT

Address: _____

City/State/Zip: _____

Real Property Transfer Tax: \$ N/A



KAREN ELLISON, RECORDER

CONTRACT #2018.076
(Title of Document)

BOCC APPROVED
MAY 3rd, 2018
ITEM: 3

FILED

NO. 2018.076

2018 MAY -4 AM 11:17

CONTRACT FOR SERVICES BETWEEN

DOUGLAS COUNTY

AND

HDR ENGINEERING, INC.
9805 DOUBLE R BOULEVARD SUITE 101
RENO NV 89521-5917

DOUGLAS COUNTY
CLERK
[Signature]

This Contract for Services (the "Contract") is entered into by and between Douglas County, a political subdivision of the State of Nevada, through the Board of County Commissioners (the "County"), and HDR Engineering, Inc. a Nevada Corporation ("Contractor"). The County and Contractor are at times collectively referred to as the "Parties" or individually as the "Party."

WHEREAS, the Federal Emergency Management Agency is in the process of revising the flood model of the Carson River and is currently reliant on an effective model as the "best technical information";

WHEREAS, it is in the best interest of the residents of Douglas County that the flood impacts of new developments within the Carson River flood plain be properly and promptly modeled; and

WHEREAS, Contractor represents that Contractor is duly qualified, equipped, staffed, ready, willing and able to perform and render the services hereinafter described.

NOW, THEREFORE, in consideration of the mutual promises and covenants herein made, the Parties mutually agree as follows:

1. TERM AND EFFECTIVE DATE OF CONTRACT. The Contract will become effective on the later date it is approved and signed by representatives of both Parties. All tasks must be completed within four (4) years of the effective date of the Contract.

2. INDEPENDENT CONTRACTOR STATUS. The Parties agree Contractor will have the status of an independent contractor and that the Contract, by explicit agreement of the Parties, incorporates and applies the provisions of NRS 333.700, as necessarily adapted to the Parties, including the express understanding that Contractor is not an employee of the County and that:

There shall be no:

- (1) Withholding of income taxes by the County;
- (2) Industrial insurance coverage provided by the County;

- (3) Participation in group insurance plans which may be available to employees of the County;
- (4) Participation or contributions by either the Contractor or the County to the public employee's retirement system;
- (5) Accumulation of vacation leave or sick leave; and
- (6) Unemployment compensation coverage provided by the County if the requirements of NRS 612.085 for independent contractors are met.

3. INDUSTRIAL INSURANCE. Contractor further agrees that, prior to the commencement of any work and as a precondition to any obligation of the County to make any payment under the Contract, Contractor will provide the County with a work certificate and/or a certificate issued by a qualified insurer in accordance with NRS 616B.627. Contractor also agrees that, prior to commencing any work under the Contract, Contractor will complete and provide evidence to the County that Contractor has made the following written request to Contractor's insurer:

HDR Engineering, Inc. has entered into a contract with Douglas County to perform work from April of 2018 through March of 2022 and requests that an authorized insurer provide to Douglas County: (1) A certificate of coverage issued pursuant to NRS 616B.627 and (2) Notice of any lapse in coverage or nonpayment of coverage that the Contractor is required to maintain.

The certificate and notice should be mailed to:

Douglas County
Post Office Box 218
Minden, Nevada 89423

Contractor agrees to maintain all required workers' compensation coverage throughout the entire term of the Contract. If Contractor does not maintain the required coverage throughout the entire term of the Contract, Contractor agrees that the County may, at any time the coverage is not maintained by Contractor, order the Contractor to stop work, suspend the Contract, or terminate the Contract at the sole discretion of the County. For each six-month period this Contract is in effect, Contractor agrees, prior to the expiration of the six-month period, to provide another written request to the insurer for the provision of a certificate and notice of lapse in, or nonpayment of, insurance coverage. If Contractor does not make the request or does not provide the certificate before the expiration of the six-month period, Contractor agrees that the County may order the Contractor to stop work, suspend the Contract, or terminate the Contract at the sole discretion of the County.

4. SERVICES TO BE PERFORMED. The Parties agree that the personal services to be performed are as follows: Update and maintain the Carson Valley Regional HEC-RAS Model

with any proposed development to establish cumulative impacts to water surface elevations in the region. The February 2017 model developed for the Carson Water Subconservancy District (CWSD) for the purposes of a Physical Map Revision will serve as the base conditions model to assess any impacts to the regulatory floodplain and floodway. As directed by Douglas County, HDR will work with Douglas County Staff and developers to integrate grading and/or drainage changes into the model, assess impacts, produce mapping products displaying water surface elevation impacts, and produce technical documentation summarizing those impacts. A more detailed scope, schedule, and fee may be found in Exhibit A, which is attached hereto and incorporated by reference herein. Additional on-call services directed by Douglas County will be agreed to in writing.

5. PAYMENT FOR SERVICES. Contractor agrees to provide the services set forth in Paragraph 4 and Exhibit A on the basis of Direct Labor Costs times a factor of 3.2 for the services of Contractor's personnel, plus Reimbursable Expenses including travel costs from Reno to Douglas County for occasional meetings and/or field investigation. Direct Labor Cost shall mean salaries and wages, (basic and overtime) paid to all personnel engaged directly on the modifications to the Carson Valley Regional HEC-RAS Model. The Direct Labor Costs and the factor applied to Direct Labor Costs will be adjusted annually as of the first of every year to reflect equitable changes to the compensation payable to Engineer. This contract shall be serviced on an "on-call" basis as directed by Douglas County. Modifications to the model and impacts analyses will be conducted on an as needed basis and paid for accordingly on a Direct Labor plus multiplier cost as described above.

County shall not reimburse Contractor for per diem allowances. Unless Contractor has received a written exemption from the County, Contractor shall submit monthly requests for payment for services performed under this Contract. Requests for payment by Contractor may only be made for reimbursement of actual cash disbursed by Contractor. Requests for payment shall be submitted no later than fifteen (15) days after the end of a month and must include a detailed summary of the expenditures reported in a form that supports the approved budget. Specifically, Contractor agrees to provide with each request for payment a schedule of actual expenditures for the period, cumulative total expenditures for the entire contract, and a comparison of cumulative total expenditures to the approved budget. Such payment requests shall include reference to the assessor parcel number(s) to identify the properties analyzed and billable amounts attributable to each proposed property development.

6. TERMINATION OF CONTRACT. Either Party may terminate the Contract if either Party fails to correct any breach of the terms of the Contract within 30 days after receiving notice of such breach and having been given an opportunity to cure the breach.

7. NONAPPROPRIATION. All payments required pursuant to the Contract are contingent upon the availability of County funds. In accordance with NRS 354.626 and any other applicable provision of law, the financial obligations between the Parties will not exceed those monies appropriated and approved by the County for the Contract for the then current fiscal year under the Local Government Budget Act. The Contract will terminate and the County's obligations will be extinguished if the County fails to appropriate the necessary funding.

Any funds budgeted by the County pursuant to the terms of the Contract that are not paid to Contractor will automatically revert to the County's discretionary control upon the completion, termination, or cancellation of the Contract. The County will not have any obligation to re-award or to provide, in any manner, the unexpended funds to Contractor. Contractor will have no claim of any sort to the unexpended funds.

8. CONSTRUCTION OF CONTRACT. The Contract will be construed and interpreted according to the laws of the State of Nevada. There will be no presumption for or against the drafter in interpreting or enforcing the Contract. In the event a dispute arises between the Parties, the Parties promise and agree to first meet and confer to resolve any dispute. If such meeting does not resolve the dispute, then the Parties agree to mediate any dispute arising from or relating to the Contract before an independent mediator. The fee, rate or charge of the mediator will be shared equally by the Parties, who will otherwise be responsible for their own attorney's fees and costs. If mediation is unsuccessful, litigation may only proceed before a department of the Ninth Judicial Court of the State of Nevada in and for the County of Douglas that was not involved in the mediation process and attorney's fees and costs will be awarded to the prevailing party at the discretion of the court. The mediator and court will recognize any offers of judgment made by a Party pursuant to Nevada law.

9. COMPLIANCE WITH APPLICABLE LAWS. Contractor promises and agrees to fully and completely comply with all applicable local, state and federal laws, regulations, orders, or requirements of any sort in carrying out the obligations of the Contract, including, but not limited to, all federal, state, and local accounting procedures and requirements, all hazardous materials regulations, and all immigration and naturalization laws.

10. ASSIGNMENT. Contractor will neither assign, transfer nor delegate any rights, obligations or duties under the Contract without the prior written consent of the County.

11. COUNTY INSPECTION. The books, records, documents and accounting procedures and practices of Contractor related to the Contract will be subject to inspection, examination and audit by the County, including, but not limited to, the contracting agency, the County Manager, the District Attorney, and, if applicable, the Comptroller General of the United States, or any authorized representative of those entities.

12. DISPOSITION OF CONTRACT MATERIALS. Any books, reports, studies, photographs, negatives or other documents, data, drawings or other materials prepared by or supplied to Contractor in the performance of its obligations under the Contract (the "Materials") will be the exclusive property of the County and all such materials will be remitted and delivered, at Contractor's expense, to the County by Contractor upon the completion, termination or cancellation of the contract. Alternatively, if the County provides its written approval to Contractor, the Materials must be retained by Contractor for a minimum of six years after Contractor's receipt of the final payment from County and all other pending matters are closed. If, at any time during the retention period, the County, in writing, requests any or all of the Materials, then Contractor will promptly remit and deliver the materials, at Contractor's expense, to the County. Unless the County has requested the remittance and delivery by Contractor of the

Materials, Contractor will not use, willingly allow or cause to have such Materials used for any purpose other than the performance of Contractor's obligations under the terms of the Contract without the prior written consent of the County.

13. PUBLIC RECORDS LAW. Contractor expressly understands and agrees that all documents submitted, filed, or deposited with the County by Contractor, unless designated as confidential by a specific statute of the State of Nevada, will be treated as public records pursuant to NRS chapter 239 and shall be available for inspection and copying by any person, as defined in NRS 0.039, or any governmental entity. Contractor expressly and indefinitely waives all of its rights to bring, including but not limited to, by way complaint, interpleader, intervention, or any third party practice, any claims, demands, suits, actions, judgments, or executions, for damages or any other relief, in any administrative or judicial forum, against the County or any of its officers or employees, in either their official or individual capacity, for violations of or infringement of the copyright laws of the United States or of any other nation.

14. INDEMNIFICATION. Contractor agrees to indemnify and save and hold the County, its agents and employees harmless from any and all claims, causes of action or liability to the extent caused by and arising from the willful misconduct or negligent or reckless performance of this contract by Contractor or Contractor's agents or employees. Neither Party to this Agreement shall be liable to the other Party for any special, incidental, indirect, or consequential damages (including but not limited to loss of profits or revenue; loss of use or opportunity; loss of good will; cost of substitute facilities, goods, or services; and/or cost of capital) arising out of, resulting from, or in any way related to this Contract from any cause or causes, including but not limited to any such damages caused by the negligence, errors or omissions, strict liability or breach of contract.

If Consultant is made a party to any litigation concerning County's flood control structures, County shall reimburse Consultant for all costs of defense pending a final determination of Consultant's professional liability. If Consultant is found by a court of competent jurisdiction to have been negligent, reckless or otherwise at fault, Consultant shall reimburse County the costs of defense paid by County, and shall satisfy any judgment up to Consultant's limitation of liability. Any amount in excess of Consultant's limitation of liability shall be paid by County.

15. ALLOCATION OF RISK. COUNTY AND CONSULTANT HAVE EVALUATED THE RISKS AND REWARDS ASSOCIATED WITH THIS CONTRACT, INCLUDING CONSULTANT'S FEE RELATIVE TO THE RISKS ASSUMED, AND AGREE TO ALLOCATE CERTAIN OF THE RISKS, SO, TO THE FULLEST EXTENT PERMITTED BY LAW, THE TOTAL AGGREGATE LIABILITY OF CONSULTANT (AND ITS RELATED CORPORATIONS, SUBCONSULTANTS AND EMPLOYEES) TO OWNER AND THIRD PARTIES GRANTED RELIANCE IS LIMITED TO THE LESSER OF \$1,000,000 OR ITS FEE, FOR ANY AND ALL INJURIES, DAMAGES, CLAIMS, LOSSES, OR EXPENSES (INCLUDING ATTORNEY AND EXPERT FEES) ARISING OUT OF CONSULTANT'S SERVICES OR THIS AGREEMENT REGARDLESS OF CAUSE(S) OR THE THEORY OF LIABILITY, INCLUDING NEGLIGENCE, INDEMNITY, OR OTHER RECOVERY. THIS LIMITATION SHALL NOT APPLY TO THE EXTENT THE DAMAGE IS PAID UNDER CONSULTANT'S COMMERCIAL GENERAL LIABILITY INSURANCE POLICY.

16. MODIFICATION OF CONTRACT. This Contract and the attached exhibits constitute the entire agreement and understanding between the Parties and may only be modified by a written amendment signed by both Parties.

17. AUTHORITY. The Parties represent and warrant that they have the authority to enter into this agreement.

18. STANDARD OF CARE. Contractor will perform all services in a manner consistent with that level of care and skill ordinarily exercised by other members of Contractor's profession currently practicing in the same locality under similar conditions.

Use of the word "certify" or "certification" by a registered professional engineer in the practice of professional engineering or land surveying constitutes an expression of professional opinion regarding those facts or findings which are the subject of the certification, and does not constitute a warranty or guarantee, either expressed or implied. Certification of analyses is a statement that the analyses have been performed correctly and in accordance with sound engineering practices. Certification of structural works is a statement that the works are designed in accordance with sound engineering practices and COUNTY approved design loads. Certification of "as built" conditions is a statement that the structure(s) has been built according to specifically identified drawings, specifications and contract documents to the extent the structure(s) is readily observable, is in place, and is fully functioning. The definition and legal effect of any and all certifications shall be limited as stated herein.

19. WAIVER OF LIEN. Contractor understands and agrees that the services it will render to the County are not intended for the improvement of real property or to otherwise grant any rights to Contractor pursuant to NRS chapter 108.

20. THIRD PARTY BENEFICIARY. Nothing contained in this Agreement is intended to convey any rights or to create a contractual relationship with any third party or to otherwise allow a third party to assert a cause of action against either Contractor or County.

21. NOTICES. All notices, requests, demands and other communications hereunder must be in writing and will be deemed delivered when sent via certified mail, return receipt requested or by commercial courier, provided the courier's regular business is delivery service and provided further that it guarantees delivery to the addressee by the end of the next business day following the courier's receipt from the sender, addressed as follows (or any other address that the Party to be notified may have designated to the sender by like notice):

To County:

Douglas County
Attn: County Engineer
Post Office Box 218
Minden, Nevada 89423

To Contractor:

Ruedy Edgington, Vice President
HDR Engineering Inc.

9805 Double R Boulevard Suite 101
Reno, NV 89521-5917

22. MAINTENANCE OF STRUCTURES AND SYSTEMS. County agrees that structures and systems studied, reviewed, analyzed or designed by Consultant are dependent upon County's continued operation and maintenance of the project structures and systems in accordance with all permits, laws and regulations that permit the construction and operation of the structures and systems, including any Consultant prepared operations and maintenance plans. Should County fail to maintain the structures to be in full compliance with permits, approvals, and operations and maintenance plans, Consultant shall have no liability to County, and County shall indemnify, release and hold Consultant and its employees harmless from any liability resulting from any direct or consequential damage resulting from such non-compliance, including but not limited to claims made by third-parties against Consultant.

23. VISUAL INSPECTIONS. For visual inspections, County hereby releases, holds harmless, indemnifies and agrees to defend Consultant against any claims, damages, losses, liabilities, expenses or costs arising out of any failure to detect hidden, covered, inaccessible, or internal structural or material defects, corrosion, or damages in components, embedment, reinforcing, anchorages and parts of equipment, structures, or mechanisms being inspected, that are not readily discernible by external visual inspection through reasonable efforts.

24. CONFLICT OF INTEREST. By signing the Contract, Contractor agrees that any information obtained from Douglas County, in whatever form, will not be divulged to other competing interests without the permission of the County Manager. In the event of a breach of this provision, Douglas County may immediately withdraw, without penalty or any payment, from the Contract. Contractor must notify Douglas County of any other contracts or projects Contractor is working on that may impact Douglas County.

IN WITNESS WHEREOF, the Parties hereto have caused the Contract to be signed and intend to be legally bound thereby.

HDR Engineering, Inc.
By: Ruedy Edgington 4/13/18
Ruedy Edgington, Vice President (Date)

Douglas County
By: Steven J. Waler 5-3-18
Steven J. Waler (Date)
Chairman, Douglas County Board of Commissioners



Attachment A
Scope of Services

Douglas County Hydraulic Modeling IDIQ

March 2018





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Project Understanding

Under a FEMA Cooperating Technical Partners (CTP) Grant, Carson Water Subconservancy (CWSD) in conjunction with Douglas County and local stakeholders, have recently submitted a Physical Map Revision (PMR) package to FEMA for the East Fork, West Fork, and Main stem of the Carson River in Douglas County, NV. To support the flood hazard map revisions, it was necessary to develop a regional hydraulic model for the Carson Valley. The purpose of this model was to establish revised base flood elevations and flood hazard extents, including the 1-percent-annual-chance (1%) floodplains and floodways.

The complex hydrodynamics of the Carson Valley necessitated the use of a combined one-dimensional (1D) and two-dimensional (2D) hydraulic model to accurately capture the shallow dispersed flow in the Carson Valley. The model was developed with the latest version of HEC-RAS 5.0 with the capability to conduct 2D modeling.

One of the challenges to completing a floodway analysis for this area is the character of multiple flow paths in the valley and the model being a 1D/2D model with unsteady-state inflows. The standard FEMA process for conducting Method 4 equal encroachment analysis followed by a Method 1 is not available in this version of HEC-RAS for 2D areas. In addition, many areas of the Carson Valley floodplain have highly bifurcated flow paths, where the general concept of a conveyance-based floodway is not appropriate. For this reason, HDR was involved in conversations with Douglas County's floodplain managers and engineers, who decided that a floodway determination was only relevant in areas of the floodplain where the flow path is contiguous across the entire valley. With the exception of one short reach on the East Fork, where there is an existing floodway, the East Fork and West Fork do not include floodways as part of the PMR submitted to FEMA.

Because there is not a designated floodway for much for the Carson Valley floodplain, Douglas County intends to keep track of the cumulative rise in this area using the regional HEC-RAS model. In those areas where a floodway has not been established, Douglas County is contracting with HDR Engineering Inc. to update the regional model with any proposed development to establish cumulative impacts to water surface elevations in the region. As directed by Douglas County, HDR will work with Douglas County Staff and developers to integrate grading and/or drainage changes into the model, assess impacts, produce mapping products displaying water surface elevation impacts, and produce technical documentation summarizing those impacts.

The purpose of these analyses/reviews is to determine if a "no rise" situation exists for 1% flood regime for the Carson River for the proposed development using the FEMA accepted effective hydrology and hydraulic model. HDR will simulate the proposed conditions grading and improvements provided by the applicant. Should the project not be constructed per plan and simulation, the actual water surface impacts may differ. Additionally, HDR will only simulate the 1% storm flows from the FEMA model of the Carson River system based on a rigid boundary condition which existed at the time the model was submitted to FEMA for map revisions (February, 2017). Storm events in excess of the 100-year flow will result in different hydraulic results and could result in

flooding not reflected in the model. Additionally, the hydrodynamics Carson River system could change in response to significant storm events. Flood events may cause erosion and evulsions or failure of levees and berms that may change flow paths and flooding extents. HDR is not responsible for updating or altering the base or FEMA effective model to reflect natural morphologic stream channel and floodplain changes over time. Nor is HDR responsible for changes in flooding to existing or proposed infrastructure due to these natural changes. HDR is also not responsible for predicting or making assumptions on levee breaches which could potentially change flood flow dynamics.

The HDR modeling is for regulatory purposes only in determining water surface elevation impacts of proposed development against the Effective FEMA model. The submitting developer and/or developer's engineer is responsible for any ancillary hydraulic, sedimentation, erosion, and/or hydrologic impacts of the proposed development.

If rises in water surface elevations are established in the model due to proposed development, the determination of acceptable impacts to the regulatory floodplain will be the responsibility of Douglas County, NV. HDR is not responsible under this contract for submitting map changes to FEMA or changes in flood extents due to proposed development. Changes to the floodplain can only be made under the FEMA Letter of Map Change process which are beyond this scope of services.

It is anticipated that all proposed encroachments into the Carson River floodplain will be identified by Douglas County through the grading, building and development permitting process and requests for modeling assistance from HDR will only come from designated Douglas County staff and not from individual property owners or developers seeking permit approvals. Each of these requests will be unique in their potential level of effort and complexity and could potentially include minor grading changes, proposed roadways, proposed drainage improvements or mass graded subdivisions. In some instances HDR will be tasked with modeling the proposed improvements, reporting the findings to Douglas County which may precipitate changes to the proposed project to reduce localized impacts requiring that HDR perform a revised analysis based on those changes with more than one potential iteration of this process. In other instances, the owner's engineer may have performed the analysis with the regional model and HDR will be responsible for reviewing the model for technical conformance with the regional modeling standards and potentially recommending changes that may require additional reviews of modeling data revised to reflect HDR comments.

The level of effort associated with each request will vary depending on complexity and will be negotiated as individual task orders under this contract and could include all or only some of the potential tasks listed below.

All of HDR's tasks will be based upon the assumption that all of the proposed project improvements have been fully disclosed including fencing, walls, landscaping and all drainage features and that the projects will be constructed in full conformance with the plans provided. If actual construction of these improvements varies from what was provided to HDR for analysis or review, the findings provided by HDR in connection with that task order will be invalid and will be the responsibility of Douglas County and the developer to rectify.

HDR is contracting directly with Douglas County. Douglas County will charge the developer an initial fee to cover initial administrative costs for Douglas County and HDR.

The task orders will be negotiated prior to authorization. HDR will need to review the proposed project and supporting data in a sufficient level of detail to determine the effort and scope elements required. This effort will be included in our fee estimate. HDR will bill on a Time and Materials (T&M) basis within the fee estimate developed for each unique project. Additional review efforts created by developer caused changes or non-compliance with the “no-rise” criteria will be billed on a T&M basis above and beyond the initial fee estimate.

The developer will be responsible for providing HDR with the following datasets prior to any analysis:

- Project Grading Plans in AutoCAD format in a commonly accepted horizontal projection and vertical datum.
- Project Plans and Details (including, grading, revegetation, building, and drainage improvements) in digital or PDF format in an appropriate engineering scale.
- Any drainage reports prepared for the site.
- Survey data for the site in a commonly accepted horizontal projection and vertical datum.

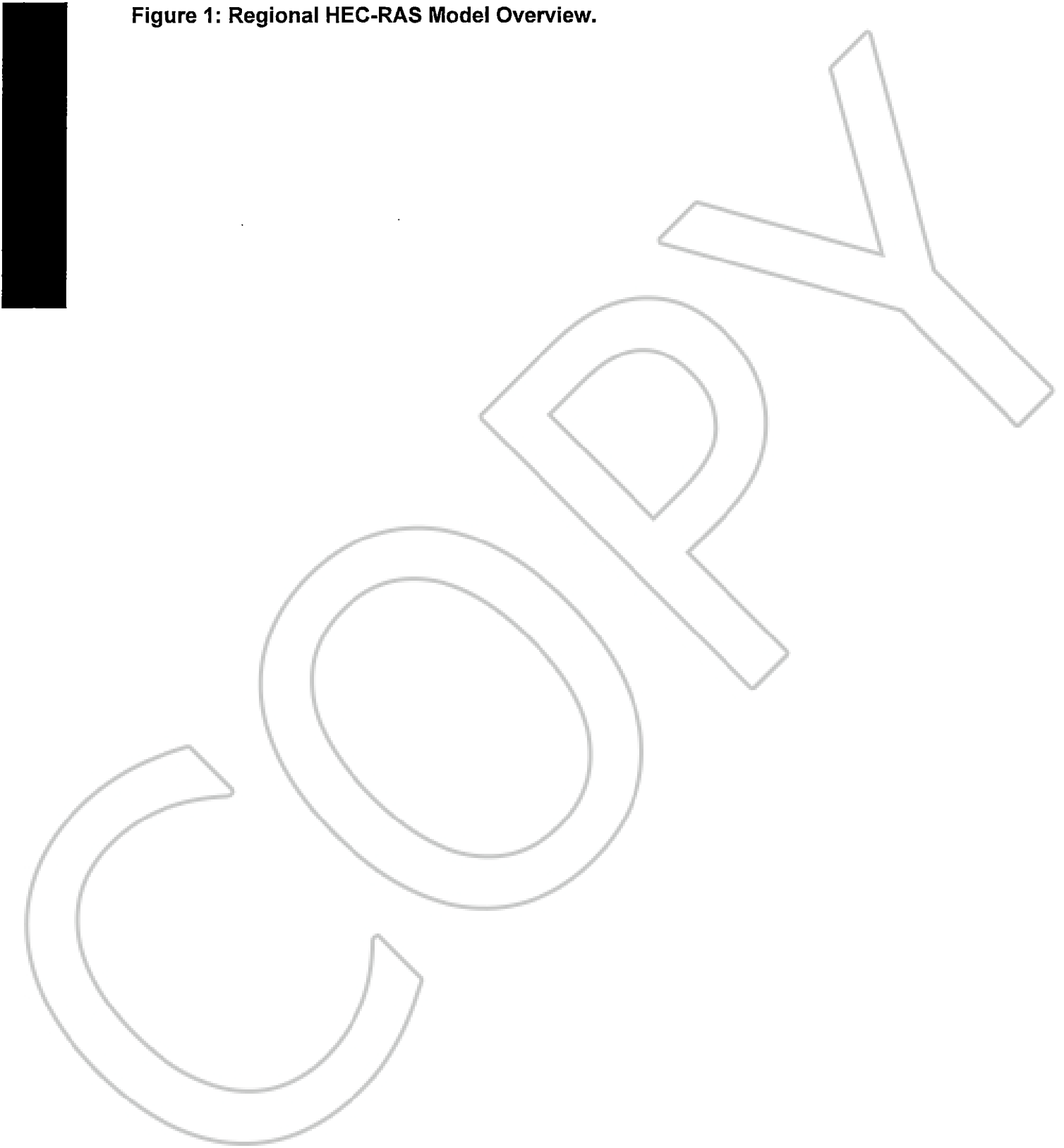
The developer or developer’s engineer will be responsible for any alternatives analysis and/or design changes that arise due to unacceptable water surface impacts. HDR is only responsible for incorporating plans into the most current version of the hydraulic model and reporting on impacts.

The developer and County will be responsible for reviewing and confirming our basis of analysis, assumptions, and conclusions outlined in our technical memo prior to accepting our results.

HDR’s findings are based only on the plans and data provided. Any deviations during construction that result in a different configuration than is modeled will be the responsibility of the developer and Douglas County.

The tasks described below are potential tasks. Each project will be individually task driven. The items in this scope are typical tasks.

Figure 1: Regional HEC-RAS Model Overview.



Potential Task Order Scope Elements (HDR Performing the Analysis)

1 Project Management

HDR personnel will provide project management activities in support of the Douglas County Hydraulic Modeling IDIQ project. HDR project management activities include project initiation, invoices, project tracking, internal resources review, client coordination, and project coordination. These activities will be conducted to consistently monitor project progress, anticipate project needs, and implement action plans to maintain scope, fee, and schedule to the extent possible.

1.1 Project Initiation

Upon approval of the agreement, HDR personnel will conduct management activities related to the initiation of the project. These will include contract initiation, preliminary project review, and electronic project setup.

1.2 Invoicing and Progress Tracking

Schedule and budget progress will be reported through submission of monthly invoices. Monthly invoices will include summary of tasks worked on in that period and cost of those tasks to assist the Douglas County project manager track progress and project spending.

1.3 Project Coordination

HDR's Project Manager will work with Douglas County staff to facilitate regular communication and transfer of information with the project team. Internal and client project meetings will be held as necessary via conference call or in-office meetings at the Douglas County offices.

Assumptions:

- Douglas County personnel will be responsible for assembling non-HDR members for meetings and for developing meeting notes.

Deliverables:

- Status reports to accompany monthly invoices.

2 Data Collection

For each proposed development, there are a number of datasets that will be obtained and reviewed in order to gain a better understanding of the hydrologic and hydraulic impacts to the FEMA Flood Hazard Areas. These data will help refine the regional hydraulic model to reflect proposed development.

2.1 Topographic Data

It will be necessary for HDR to collect and review any proposed grading changes for each project from the petitioning developer. These changes will be integrated into the underlying terrain which is the foundation of the HEC-RAS model.

2.2 Survey Data

Should the project owner wish to revise the existing conditions analysis based on technically superior topographic data to that which was used in the development of the FEMA accepted hydraulic models, it will be the owners responsibility to provide such data, surveyors certification of these data and to resolve any gaps in data that would be necessary for HDR to incorporate these additional data into the model terrain surface. HDR will review any survey data provided and determine if the data and associated certification appears to be complete enough for the intended purpose. If it is determined that existing conditions survey data provides better information than the current terrain model and impacts the water surface impact analysis, HDR will determine the need to integrate that data into the "existing conditions" model terrain.

2.3 Drainage Data

It will also be necessary for HDR to collect and review any drainage improvements to the site which impact hydraulic behavior. These changes will include but not be limited to; drainage ditch improvements or new ditches, new or altered culverts, new or altered bridges, raised roadway features, detention or retention ponds, alterations to existing stream channels such as bank stabilization. These changes will be integrated into the regional model as appropriate.

Assumptions

- Proposed Grading and Drainage Plans will be furnished to HDR from the respective developers.
- Grading and Drainage Plans will be in a digital AutoCAD, GIS or similar format.
- Grading and Drainage Plans will be on an established Horizontal Projection and Vertical Datum, with the preferred format being NAD83 State Plane Feet horizontal projection, and NAVD 88 vertical datum.
- If digital Grading and Drainage Plans are not available the developer will incur extra costs to pay HDR Staff to digitize paper grading plans.

- Plans will be developed to level of completion adequate to update the model without the need for extensive contact with the developer. It is anticipated

Deliverables

- Revised HEC-RAS Terrain Surface

3 Terrain Development

It is anticipated that the previously developed terrains for the Carson River PMR will be used for this effort. For the Douglas County portions of the model, HDR developed the project terrain from a set of mass point bare earth data collected for the Carson Valley in Douglas County, Nevada and Alpine County, California. GeoDigital International Corporation acquired airborne LiDAR mass points along the Carson River Corridor in September 2012 during drought conditions.

HDR will use the grading plans submitted by the developer to augment the current model terrain to reflect the proposed changes. These two datasets will be merged together to provide a foundation for the Regional HEC-RAS Model. The data will be merged using both ESRI's ArcMap software and HEC-RAS Mapper capabilities. The terrain data will then be converted to a two foot resolution gridded dataset for use in the HEC-RAS model.

HDR staff will coordinate with Douglas County's GIS staff to transfer any terrain updates.

Assumptions

- Existing base terrain datasets will be adequate for this modeling effort.
- Only minimal processing or editing of the data will be necessary to merge the terrains.
- Terrain dataset projection will be in NAD83 State Plane Feet Nevada West.
- Vertical datum will be NAVD 88.
- Revised terrain data will be provided in GeoTiff and ESRI TIN formats.

Deliverables

- Combined terrain dataset in GeoTiff and ESRI TIN format.

4 Model Development

After processing of the proposed project terrain, the most current version of the HEC-RAS model will be updated to reflect changes in the topography and drainage improvements for the project. It is anticipated that updates to the regional model will also reflect updates to the HEC-RAS model versioning. HDR staff will make changes to the model as needed to ensure it is compatible with the latest versioning. Geometric

changes to the regional model are anticipated but not limited to the following as appropriate:

- Addition or modification of culverts.
- Addition or modification of bridges.
- Addition or modification to breaklines in the 2D mesh.
- Modification of grid cell sizing, shape or orientation as appropriate
- Modification to the Manning's n values.
- Modification of the 1D stream channel elements.
- Modification or addition of internal boundaries.

Assumptions

- Model will be updated to and developed with the latest version of HEC-RAS
- Model will be run in unsteady-state mode with current options and tolerances for comparative purposes.
- If altered modeling time step is necessary for stability, the most current existing conditions model will be re-run with the revised time step.
- Debugging of model instabilities will be limited to 40 hrs maximum.

Deliverables

- Updated Regional HEC-RAS model.

Potential Task Order Scope Elements (Owner's Engineer Performing the Analysis)

5 Alternate Scope of Services

If the proposed developer chooses to use an alternate consultant to perform Tasks 1-4 outlined above, HDR perform a technical review for Douglas County to evaluate technical conformance with appropriate FEMA and Douglas County standards for terrain development, hydraulic model modifications and mapping tasks.

HDR Staff will review grading and drainage plans provided by the developer to evaluate model modifications for consistency with the provided development plans. HDR will also review any technical documentation outlining the modification of the terrain and model development.

HDR staff will run the proposed conditions model to verify the results are consistent with the technical documentation or mapping provided by the developer.

HDR staff will summarize its findings in a brief technical memorandum. This memo will summarize the appropriateness and technical merit of the changes made to the terrain and HEC-RAS regional model for the purposes of estimating project water surface impacts. HDR staff will also recommend any changes to be made to the model if deficiencies are identified.

Assumptions

- Douglas County will provide the alternate consultant with the latest HEC-RAS regional model.
- The Tech Memo will be produced in Microsoft Word and then converted to Adobe PDF. A draft Memo will be submitted and reviewed by Douglas County before completion. Douglas County will provide one set of consolidated comments on the Draft Report.

Deliverables

- One digital and 1 paper copy of the Memo to Douglas County.

Additional Scope Elements

6 Comparative Mapping Products

Results of the proposed conditions modeling will be processed using HEC-RAS Mapper capabilities. RAS Mapper produces water surface elevation grids and floodplain Shapefile boundaries which can be compared back to the existing condition grid to assess cumulative impacts. HDR staff will prepare a comparative grid using "raster math" capabilities in ESRI's ArcMap software. This comparative grid, along with any changes in the floodplain boundaries, will be integrated into an updated map for review by Douglas County.

Assumptions

- Water surface grids and floodplain boundary Shapefiles will be produced in NAD83 State Plane Feet Nevada West. Vertical datum will be NAVD 88.
- Maps will be in PDF format at a 24" x 36" size.

7 Technical Memorandum

HDR staff will prepare a technical memorandum describing the development of the terrain, model, and mapping products. HDR will also summarize any water surface and/or floodplain boundary impacts resulting from the proposed development. It is anticipated that this will be a basic document with enough detail to outline the process used to develop the model but will not be suitable for regulatory purposes.

HDR will work with Douglas County Staff to develop a standardized reporting format for all evaluations performed under this contract,

Assumptions

- The Tech Memo will be produced in Microsoft Word and then converted to Adobe PDF. A draft Memo will be submitted and reviewed by Douglas County before completion. Douglas County will provide one set of consolidated comments on the Draft Report.

Deliverables

- One digital and one paper copy of Memo to Douglas County

8 Quality Assurance Quality Control (QA/QC)

HDR will perform internal QA/QC activities related to project initiation and management in accordance with HDR's internal policies and procedures. HDR will also perform QA/QC on products delivered to the Douglas County using the aforementioned internal policies.

9 Work Schedule

Because the complexity and level of effort will be different for each proposed project, HDR personnel will work with Douglas County on a project by project basis to develop a reasonable "turnaround" time and manhour estimate for the above scope items. Each project schedule will be finalized within one week of receipt of plan set data for proposed projects. Revisions to grading plans caused by the developer may require additional efforts to revise the terrain, and run and debug the HEC-RAS model and may result in additional fees above and beyond the original estimate.

10 Fee Schedule

Fees will be negotiated on a project-by-project task order basis based on the complexity of the project and the location within the floodplain, and the anticipated staff that will be assigned for each task order. All HDR services will be billed on a time and materials (T&M) basis. Anticipated Hourly billing rates are below:



Table 1: Anticipated Fee schedule

Category	Rate
Project Principal	352
Sr. Water Resources Engineer	352
Project Manager	192
Project Accountant	157
Water Resource Engineer	144
CADD Technician	118

COPY

Douglas County

State of Nevada

CERTIFIED COPY

I certify that the document to which this certificate is attached is a full and correct copy of the original record on file in the Clerk-Treasurer's Office on this

12 day of May, 2018
By [Signature] Deputy