UTA20-000813
Railroad Commission Invoice No.

STATE OF TEXAS
INTERAGENCY COOPERATION CONTRACT

This Interagency Cooperation Contract ("Contract") is entered into by and between the State agencies in Texas shown below as Contracting Agencies, pursuant to the authority granted and in compliance with the provisions of "The Interagency Cooperation Act," Texas Government Code, Ch.771.

I. CONTRACTING AGENCIES:

The Performing Agency: The University of Texas at Austin

Contact Person: Mark Featherston
Assistant Director
Office of Sponsored Projects
3925 West Braker Lane
Building 156, Suite 3.340
Austin TX 78759-5316

The Receiving Agency: The Railroad Commission of Texas

Contact Person: Reese Miller, CTCD, CTCM
Contract Manager
Operations Division
1701 N. Congress Ave. 10th floor 180.4C
Austin, Texas 78701

II. STATEMENT OF WORK TO BE PERFORMED:

As described in the Surface Casing Estimator Site/Web Database FY21, attached to this Contract as Attachment A and incorporated into this Contract for all purposes.

III. BASIS FOR CALCULATING REIMBURSABLE COSTS:

Expenditures shall be reimbursed on a cost-reimbursable basis in accordance with the budget attached hereto as Attachment B: Budget.

IV. CONTRACT AMOUNT:

The total of this Contract shall not exceed $200,000.

V. PAYMENT FOR SERVICES:

Payments shall be made by the Receiving Agency on a cost-reimbursable basis upon receipt of monthly invoice from Performing Agency for actual expenditures.

VI. WARRANITES:

Performing Agency warrants that (1) it has authority to perform the services under authority granted in Section 65.31, Texas Education Code and Chapter 771, Texas Government Code; and (2) the representative signing this Contract on its behalf is authorized by its governing body to sign this Contract.

Receiving Agency warrants that (1) it has the authority to contract for the services under authority granted in Chapter 91, Texas Natural Resources Code, and Chapter 771, Texas Government Code; and (2) the representative signing this Contract on its behalf is authorized by its governing body to sign this Contract.

VII. TERM OF CONTRACT:

This Contract is effective as of September 1, 2020, and shall terminate on August 31, 2021.

VIII. TERMINATION

In the event of a material failure by a Contracting Agency to perform its duties and obligations in accordance with the terms of this Contract, the other agency may terminate this Contract upon thirty (30) days' advance written notice of termination setting forth the nature of the material failure; provided that, the material failure is through no fault of the terminating agency. The termination will not be effective if the material failure is fully cured prior to the end of the thirty-day period.

A Contracting Agency may terminate this Contract without cause upon thirty (30) days' advance written notice of termination to the other Contracting agency.

IX. CERTIFICATIONS:

The Contracting Agencies certify that, (1) the services specified above are necessary and essential for activities that are properly within the statutory functions and programs of the affected State agencies, (2) the proposed arrangements serve the interest of efficient and economical administration of the State of Texas, and (3) the services, supplies or materials contracted for are not required by Section 21, Article 16 of the Texas Constitution to be supplied under contract given to the lowest responsible bidder.

X. INTELLECTUAL PROPERTY

Performing Agency owns the entire right, title, and interest, including all patents, copyrights and other intellectual property rights, in and to all Inventions, discoveries and technology developed solely by Performing Agency in performance of the services under this Agreement.

The Receiving Agency owns the entire right, title, and interest, including all patents, copyrights and other intellectual property rights, in and to all inventions, discoveries and technology developed solely by Receiving Agency in performance of the services under this Agreement.

The Contracting Agencies Jointly own the entire right, title, and interest, including all patents, copyrights and other intellectual property rights, in and to all inventions, discoveries and technology developed jointly by Performing Agency and the Receiving Agency in performance this Agreement ("Joint Technology").

Performing Agency, as authorized by UT System, herby grants to the Receiving Agency an irrevocable, worldwide, royalty free, perpetual, non-exclusive license to use any invention made solely by Performing Agency or made jointly with the Receiving Agency during the performance of services related to this Agreement for the State's non-commercial purposes. Receiving Agency hereby grants to Performing Agency an irrevocable, worldwide, royalty free, perpetual, non-exclusive license to use any invention made solely by the Receiving Agency or made jointly with Performing Agency during the performance of services related to this Agreement for research and academic non-commercial purposes.

UTA20-000813
Railroad Commission Invoice No.

PERFORMING AGENCY	RECEIVING AGENCY
The University of Texas at Austin	Railroad Commission of Texas
By: Digitally signed by Mark Featherston Date: 2020.07.31 14:27:49 -05'00'	By: DocuSigned by: Wei Wang
Authorized Signature	Authorized Signature
Mark Featherston	Wei Wang
Assistant Director	Executive Director
Date: 31 July 2020	Date: 8/5/2020

ATTACHMENT A: STATEMENT OF WORK

Surface Casing Estimator Site/Web Database FY2021 (September 2020 through August 2021)

A proposal for financial support from the Railroad Commission of Texas

June 17, 2020

Principal Investigator: Jeffrey G. Paine, Bureau of Economic Geology, Jackson School of Geosciences, The University of Texas at Austin; jeff.paine@beg.utexas.edu

SUMMARY

This FY21 project extends previous work to construct a web-enabled Surface Casing Estimator site with statewide coverage and to scan geophysical logs of the hard-copy Q-well log data files that are evaluated to make casing recommendations for oil and gas wells drilled in Texas. Work to construct the Surface Casing Estimator Site began in 2004 to develop spatial and tabular data for specific Texas counties and make the data available to the public through the Internet. The site allows oil and gas operators, RRC staff, and others to estimate surface-casing requirements at specific locations within the completed counties. Since completion of the pilot project for Brazos County in 2004, the project will have interpreted and prepared Estimator Site data sets for 102 counties and scanned Q-well logs for 144 counties by the end of August 2020. The project comprises three primary phases of work: (1) scanning of geophysical logs for 12 counties and the initial preparation of RRC data files for 8 counties to study for addition to the Surface Casing Estimator Site, (2) interpreting the geologic data for the Estimator site study counties, and (3) constructing and reviewing the Surface Casing Estimator Site digital datasets. Log scanning will be ongoing throughout the project until project completion on August 31, 2021. Completion of the 8-county study area updates to Surface Casing Estimator Site and the final report are scheduled for August 31, 2021.

SCOPE OF WORK

The Bureau of Economic Geology (Bureau) research team will conduct investigations to scan geophysical logs from the ground water advisory unit's Q-well files and to continue constructing the web-based Surface Casing Estimator Site. Tasks include the following:

Phase 1: Project Startup and Scanning of Q-logs

The initial task for the FY21 project consists of collecting and scanning RRC Groundwater Advisory Unit Q-logs (and, if needed, supplementary Bureau logs) for counties prioritized for scanning by the RRC Groundwater Advisory Unit (GAU). The 12 counties to be added to the list of counties to be scanned during FY21 include Aransas, Bastrop, Bell, Calhoun, Callahan, Chambers, Eastland, El Paso, Lubbock, Matagorda, Oldham, and Sutton. These counties will be added to the list of remaining unscanned counties from the FY20 list, including Clay (currently in progress), Dickens, Grayson, Hardin, Jim Wells, Kleberg,

Liberty, Palo Pinto, Polk, San Patricio, Smith, and Wharton. In addition to the planned geophysical log scanning, Bureau staff may also locate, select, and scan Q-logs for the surrounding counties that have not already been scanned and that are needed to make interpretations. Log scanning will continue throughout the project and will be done by county in alphabetical order to clear shelving space in the GAU Well Log Library. GAU staff may adjust the planned log scanning task during FY21 if priorities change.

In addition to log scanning, initial work will involve preliminary study of GAU data (GIS files for the Estimator Site counties provided to the Bureau). Bureau staff will add these data to other spatial data including aquifer boundaries (if available), some Q-well locations, oil and gas wells, county surveys and abstracts, and county boundaries within a GIS database for study. Bureau staff will identify Q-logs that have not been digitally located yet from the raster images of the GAU linen location maps or geophysical log headers and review them to determine whether they are suitable for inclusion in the database. If these Q-logs are appropriate for the digital database, Bureau staff will determine digital locations and add these Q-logs to the digital files for study. Phase 1 startup work leads to and supports work for Phase 2 of this investigation.

Phase 2: Interpretation of Subsurface Geologic Data for Surface Casing Estimator Site

Bureau staff will analyze the appropriate study area geologic intervals or horizons using GAU-provided data, Q-logs, water-quality data from the Texas Water Development Board (TWDB) including operator water-supply wells, and data from water-quality samples provided by RRC. The study intervals or horizons will be determined by GAU staff and may be stratigraphic units or intervals, aquifers, top and base of fresh water (1,000 TDS), base of usable quality water (3,000 TDS), and base of underground source of drinking water (10,000 TDS), depending on the study county and region of Texas. The 8 counties to be interpreted during FY21 include four in the Panhandle West Field area (Moore, Potter, Carson, and Grey), three in the Midland Basin and Eastern Shelf (Sterling, Tom Green, and Schleicher), and one in the coastal salt-dome province (Liberty).

The Panhandle counties will be studied first. Counties in the Midland Basin will be studied next, followed by Liberty County. The GAU may adjust the county-interpretation schedule during FY21 if priorities change. Bureau staff will develop GIS attribute tables (data spreadsheets) and conduct GIS structural gridding and analysis for needed horizons. Bureau staff will construct digital layers used for the Web-enabled database and review results through evaluation of layer-overlap techniques and visual inspection. Bureau staff also will make necessary revisions and additions to the interpretive data set.

Phase 3: Construction of Web-Enabled Digital Database Accessible to the Public (Surface Casing Estimator Site)

Bureau staff will assemble a web-enabled database for the Surface Casing Estimator Site study counties, review the database to ensure accuracy, and complete needed database additions and refinements. The database will be provided on the Internet and will be accessible to the public. If necessary, Bureau IT staff

will make minor modifications to the appearance and information portrayal of the site following RRC recommendations.

Phase 4: Final Report

A final report will be delivered electronically to the GAU project manager no later than August 31, 2021. A draft of the final report shall be delivered no later than August 15, 2021 for review.

The final report will provide an overview of activities undertaken and data collected and analyzed during the project, although the primary deliverables are the scanned log images and addition of county digital data sets to the web-based Surface Casing Estimator Site. The final report may also highlight major activities and key findings, provide pertinent analysis, and describe encountered problems and associated corrective actions.

SCHEDULE AND METHODS

Log-scanning for the project will start at the beginning of the contract year (September 1, 2020) and will continue to August 31, 2021. Project start-up activities will also include receipt of GAU data from RRC for the study areas. Work for the Surface Casing Estimator web site part of the project will be ongoing and will be completed by August 31, 2021. Interpretation of the geologic data will begin after the project start-up tasks are complete. Data layers will be entered into the data set for the Surface Casing Estimator after analysis and construction of data layers for the three study areas. The web-based data information site will be available for review by August 15, 2021, and completed by August 31, 2021.

1. Begin project – September 1, 2020.
2. Scan Q-logs – ongoing until project completion on August 31, 2021.
3. Interpret subsurface geologic data and conduct GIS analyses – ongoing until project completion on August 31, 2021.
4. Maintain Surface Casing Estimator site and add new site study areas to the database accessible to the public – ongoing until project completion, August 31, 2021.
5. Prepare monthly status reports – provided following the end of each month (September – July). Reports will include site usage statistics monitored by Bureau staff.
6. Completion of new study area updates to Surface Casing Estimator Site and final report – draft report and updated Surface Casing Estimator Site submitted to GAU staff by August 15, 2021. Final report due by August 31, 2021.

Work for this project uses data provided by the GAU and standard GIS ArcMap software (version 10.6) to prepare surfaces for the Surface Casing Estimator website. Data to be used to prepare surfaces includes selected Q-log geophysical logs, RRC Surface Casing Recommendation files, RRC Salt Water Disposal files, RRC well location files and maps, and other RRC data that may be useful during the study. Data to be reviewed during the interpretation will also include water-quality data from TWDB and from water-quality

samples acquired and analyzed by RRC. Periodic meetings with RRC Groundwater Advisory Unit staff will determine geologic aspects of the study areas that will be the focus of the estimator site. Data used in the surface determinations include raster images of geophysical logs and other sources of water-quality information that are organized and analyzed using Petra and ArcMap. After data layers are constructed and checked through individual layer evaluation, layers are checked by overlap comparisons. After data layers are entered into the estimator dataset for ARCGIS Server, the estimator site is reviewed visually for consistency.

BUDGET

The total budget for this FY21 project is $200,000 (Appendix A).

DELIVERABLES

1. Scanned Q-logs provided to RRC Groundwater Advisory Unit for counties on the list of counties to be scanned, in the order preferred by RRC (Due date: Ongoing as Q-logs are scanned, but no later than August 31, 2021).
2. Web-enabled digital database information for 8 counties chosen by RRC in the Panhandle West field, the Permian Basin, and the coastal salt-dome province within the Surface Casing Estimator Site. Logs and water-quality data used by Bureau staff to supplement data provided by RRC for interpretations will also be provided to RRC (Due date: Ongoing but no later than August 31, 2021).
3. Contract Report (Due date: August 31, 2021).

BUREAU RESEARCH STAFF

Jeffrey Paine, Principal Investigator/Senior Research Scientist
Damayanti (Amy) Banerji, Research Scientist Associate
Aaron Averett, Research Scientist Associate/GIS programmer and analyst
Shukuru Makanyaga, Research Scientist Associate

Jeff Paine will serve as Principal Investigator for the project and will coordinate tasks, review progress, perform limited analysis, review, and production of GIS datasets, and prepare reports. Amy Banerji will make geologic and water-quality interpretations, provide information for GIS datasets, perform some GIS analyses, and contribute to reports. Aaron Averett will assist with GIS needs, perform some GIS analyses, assemble final GIS datasets, program data for addition of new study areas to the Estimator Site, curate Estimator Site data, and maintain the active Estimator Site throughout the project duration. Shukuru Makanyaga will scan logs, assist with log data searches and locating wells, and assist with Petra and GIS-based log analysis and interpretation.

UTA20-000813
Railroad Commission Invoice No.

ATTACHMENT B: BUDGET

PI Name:	Jeffrey Paine
Sponsor:	RRC
Proposed Start Date:	9/1/2020
Proposed End Date:	8/31/2021
Total Amount:	**$200,000.00**

Title of Project:
RRC Surface Casing Estimator Site, FY21

SubAccount

			Sponsor Year 1	Sponsor TOTAL	Sponsor TOTAL
				Funds	EFFORT
	PERSONNEL	**Months / Hours T1**			
	Jeffrey Paine (Principal Investigator)	1.00	14,530.80	14,530.80	1.00
	Shukuru Makanyaga (Researcher)	12.00	42,000.00	42,000.00	12.00
	Aaron Averett (Researcher)	2.12	13,967.59	13,967.59	2.12
	Amy Banerji (Researcher)	6.00	35,802.99	35,802.99	**6.00**
	Ken Wisian (Associate Director)	0.10	1,835.33	1,835.33	**0.10**
	TBD (Graphic Illustrator*)	0.10	476.67	476.67	**0.10**
	TBD (Editor*)	0.20	953.33	953.33	**0.20**
12	**SUBTOTAL SALARIES**	**21.52**	**109,566.71**	**109,566.71**	**21.52**
14	**FRINGE BENEFITS - Salaries**		**32,979.58**	**32,979.58**	

29	**BEG Admin.**					**24,631.46**	**24,631.46**
50	**MATERIALS & SERVICES**						
	Reproduction, report production, etc					245.69	245.69
	SUBTOTAL MATERIALS & SERVICES					**245.69**	**245.69**
67	**COMPUTER (usage)**	**IT Service Center**				6,456.00	6,456.00
	VR Usage						0.00
	Workstation						0.00
	TRAVEL	* Always check the current mileage rate.					
75	Domestic		Rates				
	Mileage @		0.56	$ per mile	60.00	33.60	33.60
	All Other Travel Expenses						0.00
	Subtotal Domestic Travel					**33.60**	**33.60**
	TOTAL DIRECT COSTS					173,913.04	**173,913.04**
	Modified Total Direct Costs (MTDC)					173913.04	173,913.04
90	**Total Indirect Costs @**		15.0%			26086.96	**26,086.96**
	Total Project Costs					**200,000.00**	**200,000.00**

OFFICE OF SPONSORED PROJECTS
THE UNIVERSITY OF TEXAS AT AUSTIN
3925 West Braker Lane, Suite 3.340 •Mail Stop A9000 • Austin, TX 78759
(512)471-6424 • Fax (512)232-6649 • osp@austin.utexas.edu

Date: 6/30/2020

To whom it may concern:

The University of Texas at Austin is pleased to endorse the following proposal enclosed for your review.

Title of Application:	*RRC Surface Casing Estimator, FY2021*	**OSP Number:**	202001935-001
Principal Investigator:	Jeffrey Paine, PhD		
Project Total Costs:	$200,000	**Cost Share amount (if applicable):**	$0
DUNS:	170230239	**Cage Code:**	9B981
Project Dates:			

LEGAL IDENTITY
The University of Texas at Austin is an agency of the State of Texas and a component institution of The University of Texas System, governed by the Board of Regents. All awards and agreements must be executed by an authorized official of The University. Individuals, Departments, or Organized Research Units may not directly enter into sponsored research agreements or legally bind The University.

The Office of Sponsored Projects (OSP) serves as the coordinating office for externally funded research projects submitted by The University of Texas at Austin. All proposals to external funding sources for sponsored projects must be submitted through OSP and all awards received for sponsored research must be processed by OSP.

Mailing Address: The University of Texas at Austin
Office of Sponsored Projects
3925 W. Braker Lane, Suite 3.340 (Mail Code A9000)
Austin, Texas 78759-5316

Telephone Number (512) 471-6424
FAX Number (512) 232-6649

AWARD NEGOTIATION
The University of Texas at Austin reserves the right to negotiate the terms and conditions of any awarded grant or contract. As an institution of higher education, The University of Texas at Austin intends to perform the work under any awarded grant or contract as fundamental research and reserves the right to: 1) require that the provider notify the University if it is to provide any export controlled

information; 2) to deny receipt of any export controlled materials; and 3) to reject any restrictions on the University's right to publish or otherwise disseminate information relating to this research.

The University's Principles and Policies Guide for Sponsored Research clarifies the fundamental issues that govern the manner in which research is conducted at The University. The Guide can be found here: https://research.utexas.edu/osp/resources/principles-and-policies-guide/

AUTHORIZED OFFICIAL

Elena V. Mota, BA, CRA, Assistant Director, Office of Sponsored Projects
The University of Texas at Austin

ADDITIONAL CONTACTS

Administrative and budgetary matters regarding the proposal:
Ryan Rousch, Proposal Analyst
The University of Texas at Austin
Office of Sponsored Projects
Phone: (512) 232-5651
Email: rousch@austin.utexas.edu

Negotiation and execution of agreement:
The University of Texas at Austin
Office of Sponsored Projects
3925 W. Braker Lane, Suite 3.340 (Mail Code A9000)
Austin, Texas 78759-5316
Phone: (512) 471-6424; FAX: (512) 232-6649
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Enclosures:
Proposal Statement of Work
Budget
Budget Justification

Surface Casing Estimator Site and Web Database

FY 2021 (9/1/2020 to 8/31/2021)

A proposal for financial support from the Railroad Commission of Texas

June 17, 2020

Principal Investigator: Jeffrey G. Paine, Bureau of Economic Geology, Jackson School of Geosciences, The University of Texas at Austin; jeff.paine@beg.utexas.edu

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Phase 4: Final Report

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SCHEDULE AND METHODS

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4. Maintain Surface Casing Estimator site and add new site study areas to the database accessible to the public – ongoing until project completion, August 31, 2021.
5. Prepare monthly status reports – provided following the end of each month (September – July). Reports will include site usage statistics monitored by Bureau staff.
6. Completion of new study area updates to Surface Casing Estimator Site and final report – draft report and updated Surface Casing Estimator Site submitted to GAU staff by August 15, 2021. Final report due by August 31, 2021.

Work for this project uses data provided by the GAU and standard GIS ArcMap software (version 10.6) to prepare surfaces for the Surface Casing Estimator website. Data to be used to prepare surfaces includes selected Q-log geophysical logs, RRC Surface Casing Recommendation files, RRC Salt Water Disposal files, RRC well location files and maps, and other RRC data that may be useful during the study. Data to be reviewed during the

interpretation will also include water-quality data from TWDB and from water-quality samples acquired and analyzed by RRC. Periodic meetings with RRC Groundwater Advisory Unit staff will determine geologic aspects of the study areas that will be the focus of the estimator site. Data used in the surface determinations include raster images of geophysical logs and other sources of water-quality information that are organized and analyzed using Petra and ArcMap. After data layers are constructed and checked through individual layer evaluation, layers are checked by overlap comparisons. After data layers are entered into the estimator dataset for ARCGIS Server, the estimator site is reviewed visually for consistency.

BUDGET

The total budget for this FY21 project is $200,000 (Appendix A).

DELIVERABLES

1. Scanned Q-logs provided to RRC Groundwater Advisory Unit for counties on the list of counties to be scanned, in the order preferred by RRC (Due date: Ongoing as Q-logs are scanned, but no later than August 31, 2021).
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3. Contract Report (Due date: August 31, 2021).

BUREAU RESEARCH STAFF

Jeffrey Paine, Principal Investigator/Senior Research Scientist
Damayanti (Amy) Banerji, Research Scientist Associate
Aaron Averett, Research Scientist Associate/GIS programmer and analyst
Shukuru Makanyaga, Research Scientist Associate

Jeff Paine will serve as Principal Investigator for the project and will coordinate tasks, review progress, perform limited analysis, review, and production of GIS datasets, and prepare reports. Amy Banerji will make geologic and water-quality interpretations, provide information for GIS datasets, perform some GIS analyses, and contribute to reports. Aaron Averett will assist with GIS needs, perform some GIS analyses, assemble final GIS datasets, program data for addition of new study areas to the Estimator Site, curate Estimator Site data, and maintain the active Estimator Site throughout the project duration. Shukuru Makanyaga will scan logs, assist with log data searches and locating wells, and assist with Petra and GIS-based log analysis and interpretation.

PI Name:	Jeffrey Paine
Sponsor:	RRC
Proposed Start Date:	9/1/2020
Proposed End Date:	8/31/2021
Total Amount:	**$200,000.00**

Title of Project:
RRC Surface Casing Estimator Site, FY21

SubAccount

					Sponsor Year 1	Sponsor TOTAL Funds	Sponsor TOTAL EFFORT
	PERSONNEL			**Months / Hours T1**			
	Jeffrey Paine (Principal Investigator)			1.00	14,530.80	14,530.80	1.00
	Shukuru Makanyaga (Researcher)			12.00	42,000.00	42,000.00	12.00
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	Amy Banerji (Researcher)			6.00	35,802.99	35,802.99	**6.00**
	Ken Wisian (Associate Director)			0.10	1,835.33	1,835.33	**0.10**
	TBD (Graphic Illustrator*)			0.10	476.67	476.67	**0.10**
	TBD (Editor*)			0.20	953.33	953.33	**0.20**
12	**SUBTOTAL SALARIES**			**21.52**	**109,566.71**	**109,566.71**	**21.52**
14	**FRINGE BENEFITS - Salaries**				**32,979.58**	**32,979.58**	
29	**BEG Admin.**				**24,631.46**	**24,631.46**	
50	**MATERIALS & SERVICES**						
	Reproduction, report production, etc				245.69	245.69	
	SUBTOTAL MATERIALS & SERVICES				**245.69**	**245.69**	
67	**COMPUTER (usage)**	**IT Service Center**			6,456.00	6,456.00	
	VR Usage					0.00	
	Workstation					0.00	
	TRAVEL	* Always check the current mileage rate.		Miles/			
75	Domestic		Rates	Days/			
	Mileage @		0.56 $ per mile	60.00	33.60	33.60	
	All Other Travel Expenses					0.00	
	Subtotal Domestic Travel				**33.60**	**33.60**	
	TOTAL DIRECT COSTS				173,913.04	**173,913.04**	
	Modified Total Direct Costs (MTDC)				173913.04	173,913.04	
90	**Total Indirect Costs @**		15.0%		26086.96	**26,086.96**	
	Total Project Costs				**200,000.00**	**200,000.00**	

BUDGET JUSTIFICATION

SALARIES

All senior personnel are UT employees, employed through the Bureau of Economic Geology. Salary rates are based on currently approved salaries for FY21 and are derived from University approved pay plans for the job categories. Salary rates used in the budget are annual salaries, plus longevity pay for those employees who receive it, divided by 12 (months).

Total effort for the principal investigator is as follows:

PERSONNEL	Sponsor Effort Months Y1	Total
Jeffrey Paine PI	1.00	1.00

Total effort for collaborating researchers on this project is as follows:

PERSONNEL	Sponsor Effort Months Y1	Total
Shukuru Makanyaga Researcher	12.00	12.00
Aaron Averett Researcher	2.12	2.12
Amy Banerji Researcher	6.00	6.00

Categories of Work:

Jeffrey Paine – Principal Investigator, Project Manager: Coordinate tasks, review geologic interpretations, monitor progress, and prepare reports.

Shukuru Makanyaga – Researcher participating in: scanning logs and assisting with log data searches, locating wells, and interpreting geophysical logs.

Aaron Averett– Researcher participating in: assembling and constructing GIS datasets and performing GIS analyses for the study.

Amy Banerji – Interpret geophysical logs, assemble GIS datasets for relevant stratigraphic and water-bearing horizons, communicate project progress and results with Bureau and RRC GAU staff, provide data for inclusion into Surface Casing Estimator Site, and provide updates and summaries for the monthly and final reports.

OTHER STAFF

Ken Wisian, Associate Director, providing management advising and project coordination. A graphics illustrator and an editor, also employed by Bureau, will assist in the reporting and preparation of the technical printed material of the research project.

Total effort for staff employed on this project is as follows:

PERSONNEL	**Sponsor Effort Months Y1**	**Total**
Ken Wisian, Associate Director	0.10	0.10
Graphics – TBD	0.10	0.10
Editing – TBD	0.20	0.20

FRINGE BENEFITS, VACATION AND SICK LEAVE BENEFITS

The University's fringe rates are negotiated with its cognizant agency (DHHS) and are part of the University's F&A Cost Rate Agreement. Rates beyond August 31, 2020 are estimates and are provided for budgeting purposes. Fringe will be charged at the applicable rate at the time the cost is incurred. The fringe rates for fiscal year 2019 (FY19) and later are as follows:

	Approved		**Projections for Planning Purposes**	
Benefits Eligibility	**FY19** *9/1/18-8/31/19*	**FY20** *9/1/19-8/31/20*	**FY21** *9/1/20-8/31/21*	**Subsequent years**
Full-time (including GRAs)	29.00%	29.8%	30.1%	+ 0.5%
Part-time	39.60%			
Ineligible	5.80%	5.10%	5.10%	5.10%

Additional fringe benefit rate information can be found at UT Austin Payroll. The current F&A Cost Rate Agreement includes the fringe benefit rates for FY19.

TRAVEL

Travel in this project only includes trips in the Austin area from BEG to RRC for project meeting and data collection. Travel costs are determined by Federal and State rates that were approved at the time the budget was created for mileage, per diem, and airfare. Airfare, mileage, in-state and out of state per diem are based on 2020 approved reimbursement rate that can be found here: https://fmx.cpa.state.tx.us/fm/travel/travelrates.php

OTHER DIRECT COSTS

a) **ADMINISTRATIVE COSTS** The administrative cost rate is 16.5% of the total direct costs on projects with a reduced indirect cost rate.

B) MATERIALS, SUPPLIES AND SERVICES

This category includes all expendable supplies for research activities as well as photocopying, report preparation expenses, long distance and cell telephone charges, and other standard office expenses related to this project's report production or office administration specific to this project. Estimates are based upon past experience and actual expenses as incurred will be charged.

C) COMPUTER EXPENSES

Researchers utilize existing computer systems that include a variety of Windows NT and LINUX workstations, UNIX workstations, mass storage devices, printers and plotters. Separate rates approved by the University are charged for connect time, processing time, and printing. PC usage is based on fixed monthly rates of $300/month, approved by the University business office. Computer charges in the budget were computed by the total funded personnel effort months plus personnel effort contributed multiplied by $300 per month.

INDIRECT COSTS

The indirect cost rate of 15% of total direct costs is based on the state agreed rate at the time of the proposal that can be viewed on the web at: https://research.utexas.edu/osp/resources/fa-memo/