

**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: Thomas Owens, CRA
Sr. Contracts Coordinator
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 FY2023, 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. WARRANTIES:

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, 2022, and shall terminate on August 31, 2023.

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, hereby 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.

FA00001320
Railroad Commission Invoice No.

PERFORMING AGENCY

The University of Texas at Austin

By: *Renee Gonzales*
Authorized Signature

Renee Gonzales

Asst. V.P. for

Research,

Director - OSP

Date: 09-07-22

RECEIVING AGENCY

Railroad Commission of Texas

DocuSigned by:
By: *Wei Wang*
Authorized Signature

Wei Wang

Executive Director

Date: 9/9/2022

**SURFACE CASING ESTIMATOR SITE AND WEB DATABASE, FY 2023
(9/1/2022 TO 8/31/2023)**

A draft proposal for financial support from the Railroad Commission of Texas

July 11, 2022

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 project is a collaboration between the University of Texas Bureau of Economic Geology (“the Bureau”) and the Railroad Commission of Texas (“RRC”) and is a continuation of previous work to construct and maintain a public, web-enabled Surface Casing Estimator (SCE) site. The project, which facilitates the use of public data to estimate surface casing recommendations for oil and gas wells drilled in Texas, includes three general activities: (1) scanning RRC’s repository of hardcopy geophysical logs (“Q logs”), (2) interpreting the geophysical data to assess the depth of fresh or usable quality water, and (3) constructing, reviewing, and maintaining the digital data sets on the public SCE website. The SCE site allows oil and gas operators, RRC Groundwater Advisory Unit (GAU) staff, and others to estimate surface-casing requirements to protect groundwater at specific locations within counties that have been scanned and interpreted.

This project began in 2004 with the development of spatial and tabular data sets for Brazos County, Texas. The project was renewed and expanded to include other counties in subsequent years. In each year since 2004, RRC (or the Texas Commission on Environmental Quality before 2012) and the Bureau have selected and prioritized counties and areas of the State for which Q logs were scanned, the data were interpreted, and the information was made available to the public. By August 31, 2022, the project will have scanned Q logs for 157 of the 254 counties in Texas (fig. 1), and interpretations and SCE site data sets will have been prepared for 112 counties (fig. 2).

For Fiscal Year 2023 (“FY23”), RRC and the Bureau propose (1) to scan RRC Q logs for eight counties, (2) to interpret four contiguous geographic areas that include eight counties, and (3) to continue to make improvements to the SCE site. The Bureau will close the FY23 project with a report documenting the progress made during the fiscal year. It is expected that this project will be renewed each fiscal year until RRC’s inventory of Q logs has been scanned and interpreted.

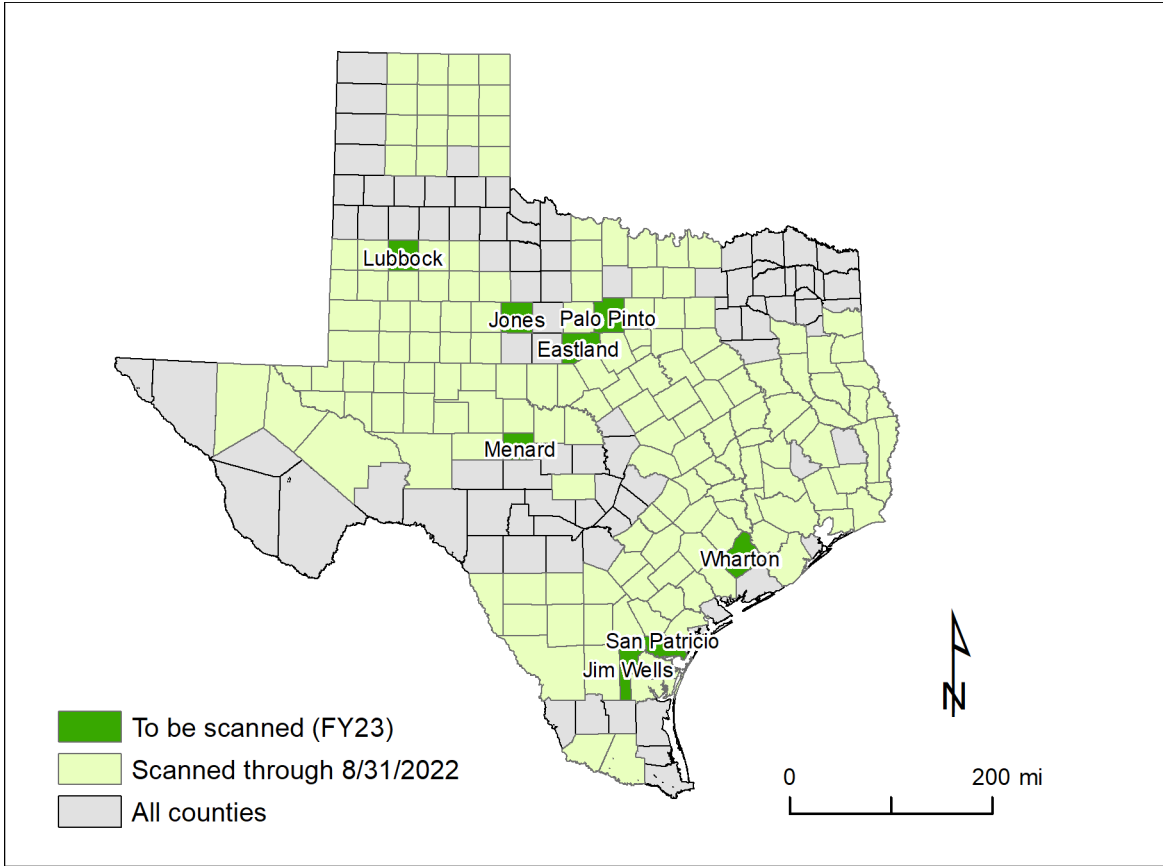


Figure 1. Counties with Q logs that are proposed to be scanned in FY23. Also shown are counties for which Q-log scanning has been completed through the end of FY22.

SCOPE OF WORK

The Bureau research team will conduct investigations to scan geophysical logs from the GAU’s Q-log files, to interpret key hydrogeological boundaries in RRC-selected counties, and to continue enhancing the SCE website. The project includes four phases as follows:

Phase 1: Project Startup and Scanning of Q Logs

The initial task for the FY23 project consists of collecting and scanning RRC Q logs in counties that are prioritized for scanning by the GAU. RRC staff have identified the following eight counties (with an estimated total of 7,097 well location folders containing one or more Q logs per folder) for scanning during FY23 (fig. 1):

- Wharton County (1,442 folders)
- San Patricio County (1,039 folders)

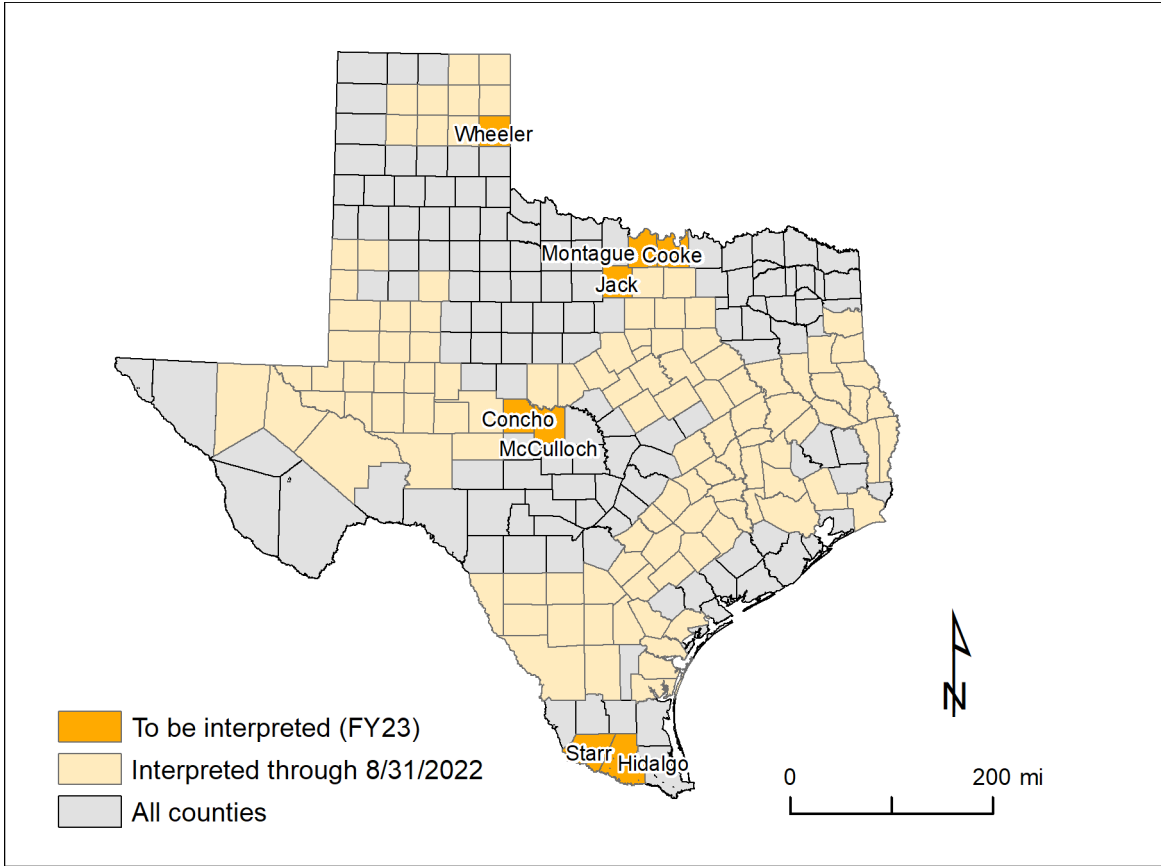


Figure 2. Counties that are proposed to be interpreted in FY23 in south Texas (Starr and Hidalgo), central Texas (Concho and McCulloch), north-central Texas (Cooke, Jack, and Montague), and the panhandle (Wheeler). Also shown are counties for which interpretation has been completed through the end of FY22.

- Jim Wells County (1,437 folders)
- Eastland County (954 folders)
- Jones County (1,083 folders)
- Menard County (207 folders)
- Palo Pinto County (771 folders)
- Lubbock County (164 folders)

Each well location folder may contain multiple Q logs.

If the selected counties are completed before the end of the project year, GAU staff may provide the Bureau with a list of additional counties to scan. In addition, GAU staff may, in consultation with the Bureau, adjust the planned log scanning task during FY23 as needed to meet agency needs.

In addition to the county-focused Q-Log scanning, the Bureau staff may also identify, locate, and scan additional Q logs to support the Bureau's ongoing interpretative work on this project. This may include logs in adjacent counties that have not yet been selected for scanning but may be of value to the Bureau's interpretive work.

To support the Q-log scanning and assembly of data sets, the Bureau will also conduct a preliminary study of existing GAU GIS data for the selected counties. 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 locations and add these Q logs to the digital files for study.

Phase 2: Interpretation of Subsurface Geologic Data for the SCE Website

RRC staff have identified eight counties in four study areas that will be interpreted for this project. (fig. 2). These counties and study areas include:

- Hidalgo County (south Texas)
- Starr County (south Texas)
- McCulloch County (central Texas)
- Concho County (central Texas)
- Wheeler County (panhandle)
- Montague County (north-central Texas)
- Cooke County (north-central Texas)
- Jack County (north-central Texas)

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), or base of underground source of drinking water (10,000 TDS), depending on the study county and region of Texas. Interpretation surfaces and county order will be determined in consultation with GAU staff.

Other information may also be used by the Bureau to interpret the data, including water-quality data from the Texas Water Development Board (TWDB), operator water-supply wells, and water-quality data provided by GAU.

The Bureau staff will develop GIS attribute tables (data spreadsheets) and conduct GIS structural gridding and analysis for needed horizons. The Bureau will construct digital layers used for the Web-enabled database and review results through evaluation of layer-overlap techniques and visual inspection. The Bureau will make necessary revisions and additions to the interpretive data set.

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

Bureau staff will assemble a web-enabled database for the SCE 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, the Bureau will make minor modifications to the appearance and information portrayal of the site following GAU recommendations.

Phase 4: Final Report

The Bureau will prepare and submit a final report to the RRC project manager and the RRC contract manager no later than August 31, 2023. The report may be delivered electronically. 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 SCE site. The final report may also highlight major activities and key findings, provide pertinent analysis, and describe encountered problems and associated corrections.

The final report will document any variances in the scope of work identified in Phases 1, 2 and 3 from the work that was completed during the fiscal year (for example, if Q logs from one county were not completely scanned because interpretation of an area required additional effort).

SCHEDULE AND METHODS

Log-scanning for the project will start at the beginning of the contract year (September 1, 2022) and will continue to August 31, 2023. Project start-up activities will also include receipt of data from GAU staff for the study areas. Work on the SCE site will be ongoing and will be completed by August 31, 2023. 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 SCE site after analysis and construction of data layers for the study areas. Additions to the SCE site will be available for GAU review by August 15, 2023 and completed by August 31, 2023.

1. Begin project – September 1, 2022.
2. Scan Q logs – ongoing until project completion on August 31, 2023.
3. Interpret subsurface geologic data and conduct GIS analyses – ongoing until project completion on August 31, 2023.
4. Maintain SCE site and add new site study areas to the database accessible to the public – ongoing until project completion, August 31, 2023.
5. Completion of new study area updates to SCE site and final report – draft report and updated SCE site submitted to GAU staff by August 15, 2023. Final report due by August 31, 2023.

Work for this project uses data provided by the GAU and standard GIS ArcMap software (version 10.6 or higher) to prepare surfaces for the SCE 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 water-quality samples acquired and analyzed by RRC. Periodic meetings with GAU staff will determine geologic aspects of the study areas that will be the focus of the SCE 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 data set for ArcGIS Server, the SCE site is reviewed visually for consistency.

BUDGET

The total budget for this FY23 project is \$200,000 (App. A and B).

DELIVERABLES

1. Scanned Q logs provided to GAU with an emphasis on counties on the selected list of counties to be scanned, in the order preferred by GAU (Due date: Ongoing as Q logs are scanned, but no later than August 31, 2023).
2. Web-enabled digital database information for the site and for counties chosen by RRC in south Texas (Hidalgo and Starr), central Texas (Concho and McCulloch), north-

central Texas (Montague, Cooke, and Jack), and the northern Panhandle (Wheeler). Logs and water-quality data used by Bureau staff to supplement data provided by RRC for interpretations (including Petra project data, if used) will also be provided to RRC (Due date: Ongoing but no later than August 31, 2023).

3. Three quarterly status reports containing status of scanning and interpreting tasks and usage statistics for the SCE site (due on December 15, 2022, March 15, 2023, and June 15, 2023)
4. Contract Report (Due date: August 31, 2023).

BUREAU RESEARCH STAFF

Jeffrey Paine, Principal Investigator/Senior Research Scientist

Shukuru Makanyaga (or equivalent), Research Scientist Associate

William Piejko (or equivalent), Research Scientist Assistant or Office Assistant

Aaron Averett, Research Scientist Associate/GIS programmer and analyst

Jeff Paine will serve as Principal Investigator for the project and will coordinate tasks, review progress, perform limited analysis, review, and production of GIS data sets, and prepare reports. Shukuru Makanyaga (or a qualified replacement at the Research Scientist Associate level) will make geologic and water-quality interpretations, provide information for GIS data sets, perform some GIS analyses, and contribute to reports. William Piejko (or a qualified replacement) will scan logs, assist with log data searches and locating wells, and assist with Petra and GIS-based log analysis and interpretation. Aaron Averett will assist with GIS needs, perform some GIS analyses, assemble final GIS data sets, program data for addition of new study areas to the SCE site, curate SCE site data, and maintain the active SCE throughout the project duration.

APPENDIX A: PROPOSED BUDGET

Category	Amount
Salaries	\$109,194.20
Fringe Benefits	\$32,758.26
BEG Administrative Costs	\$25,269.42
Materials and Services	\$306.00
Computer Usage	\$6,351.00
Travel	\$34.16
UT Indirect Costs	\$26,086.96
TOTAL	\$200,000

APPENDIX B: BUDGET JUSTIFICATION**Salaries and Roles (Researchers)**

All senior personnel are UT employees, employed through the Bureau of Economic Geology. Salary rates are based on currently approved salaries for FY23 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 and collaborating researchers is as follows:

Staff	Effort (months)	Amount
Jeffrey Paine (PI)	1.00	\$15,411.17
Unnamed geologist (interpreter)	6.00	\$35,802.99
Unnamed research assistant (log scanner)	12.00	\$43,680.00
Aaron Averett (researcher)	1.87	\$12,841.71

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

Unnamed geologist (replacement for A. Banerji, RSA IV) – 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.

Unnamed researcher (replacement for S. Makanyaga, RSA I) – Participate in scanning logs, assist with log data searches, locate wells, and interpret geophysical logs.

Aaron Averett– Assemble and construct web-enabled GIS datasets, perform GIS analyses, and modify and update the Surface Casing Estimator Site as needed.

Salaries (Other Staff)

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

	Effort (months)	Amount
Graphics staff (TBD)	0.10	\$500.00
Editor (TBD)	0.20	\$958.33

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, 2023 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 2023 (FY23) and later are as follows:

	Approved	Projections for Planning Purposes			
	FY23 9/1/22 - 8/31/23	FY24 9/1/23 - 8/31/24	FY25 9/1/24 - 8/31/25	FY26 9/1/25 - 8/31/26	FY27 9/1/26 - 8/31/27
Full-time (including GRAs)	30%	30.5%	31%	31.5%	32%
Part-time					
Ineligible	4.3%	4.3%	4.3%	4.3%	4.3%

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 FY23.

Travel

Travel in this project only includes trips in the Austin area from BEG to RRC for project meetings and data transfer. 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 FY22 approved reimbursement rate that can be found here: <https://fm.x.cpa.state.tx.us/fm/travel/travelrates.php>

Administrative Costs

The Bureau's administrative cost rate is 17% of the total direct costs on projects with a reduced UT indirect cost rate.

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.

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 modified total direct costs is based on the state-agreed rate at the time of the proposal that can be viewed at: <https://research.utexas.edu/osp/resources/fa-memo/>