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1/12/89

**Maricopa County  
Flood Control District  
Reed Landfill  
Removal Study  
Contract FCD 88-48**

**Reference No. 2178A474  
REVISION NO. 1**



**WESTERN  
TECHNOLOGIES  
INC.**  
The Quality People

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3737 East Broadway Road  
P.O. Box 21387  
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Flood Control District of  
Maricopa County  
3335 West Durango Street  
Phoenix, Arizona 85009

January 12, 1989

Attn: Mr. Nicholas P. Karan, P.E.  
Chief, Engineering Division

Re: Reed Landfill Removal Study Proposal  
Contract FCD-88-48

Ref. No. 2178A474  
Revision No. 1

Western Technologies Inc. (WTI) is pleased to submit a revised proposal for the Reed Landfill Removal Study. This proposal is based on our December 20, 1988 meeting and subsequent conversations with Flood Control District (FCD) staff. WTI believes this proposal has addressed all of the discussed issues.

The enclosed pages replace pages 1-14 of the original submittal. In addition, the following revised documents are submitted:

Project Schedule, Figure 3  
Project Organization Chart (insert in Appendix E)  
General Conditions (insert in Appendix G)

Mr. J.G. Bennitt, P.E., President, has been added to the Project Review Board replacing Mr. Kent Hamm. Mr. Bennitt's resume is attached.

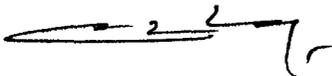
WTI and its subcontractor, Brooks, Hersey & Associates, look forward to a meeting in the near future to discuss this revised proposal. If you need additional information, please contact us at (602) 437-3737.

Sincerely,

WESTERN TECHNOLOGIES INC.



Wesley Shoner, P.E.  
Project Manager  
Environmental Engineering Services



Mohammad A. Latif, P.E.  
Managing Director  
Environmental Engineering Services

/dl

Attachments

Copies to: Addressee (6)



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REED LANDFILL REMOVAL STUDY  
FLOOD CONTROL DISTRICT  
OF MARICOPA COUNTY  
CONTRACT NO. FCD 88-48

REF. NO. 2178A474  
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I. INTRODUCTION

The Reed Landfill was apparently operated as a construction debris landfill in violation of the Flood Control District (FCD) of Maricopa County regulations. It is located in the SE 1/4 of the SE 1/4 of Section 25, T1N,R1E, approximately 1,350 feet north of Southern Avenue on 67th Avenue (see Figure 1). FCD desires to remove the deposited materials to authorized disposal sites at minimum cost. To accomplish this, the following work tasks must be performed.

- A. Site investigations to determine more accurately the content of the landfill material.
- B. Site investigations to determine more accurately the volume of material in the landfill.
- C. Determination of disposal sites and haul route options that are available for the landfill material.
- D. Development of a monitoring procedure to be used during the actual landfill removal.
- E. Development of procedures for the handling of hazardous waste materials should they be encountered.



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- F. Preparation of plans, construction special provisions and engineer's estimate for a removal contract.

Western Technologies Inc. (WTI) has performed recent projects similar to this one, on time and within budget. WTI is currently involved in the evaluation of potential soil contamination by pesticides at the City of Eloy Landfill. This project included the formulation of a sampling plan for Arizona Department of Environmental Quality (ADEQ) approval. The sampling plan was implemented after ADEQ approval; samples were obtained and analyzed by WTI. A report describing field activities and providing analytical data was prepared and submitted to ADEQ.

Two flood control projects involving landfill monitoring plans have been successfully completed. These projects are the Arizona Canal Diversion Channel located at 67th Avenue and Greenway Road (December, 1985), and the New River Improvements Project North of Peoria Avenue (December, 1988).

WTI has supplemented the proposed project team skills in preparation of construction documents by bringing the local firm Brooks Hersey & Associates (BHA) into the project team. BHA has completed numerous projects for the FCD and is familiar with your requirements. Thus, we believe that the WTI/BHA project team can successfully complete this project on time and within budget.

This proposal presents the project scope, methodology, fee and schedule in the subsequent sections.



## II. SCOPE OF WORK

The scope of work and related documents provided by FCD are presented in Appendix A. The project will be performed in two phases, as follows.

- o Phase I will consist of site investigations, determination of disposal site and haul route options, development of monitoring and hazardous waste handling procedures, and preparation of an engineer's estimate.
- o Phase II will consist of the advertisement-ready preparation of plans, technical specifications, and bidding schedules for removal of the landfill.

There will be approximately a 30-day to 60-day delay between the completion of Phase I and a decision by the District to proceed with Phase II. It is understood that Phase II may not proceed.

WTI/BHA proposes the following sequence of activities for each phase:

### Phase I

- 1) Accurately establish and locate backhoe sampling locations on a 50-foot by 100-foot grid as shown in Figure 2. Surface elevations will be established. If existing structures or other obstructions make excavation and sampling too difficult, a revised location or elimination of that location will be chosen. Written justification for this action will be provided. A revised grid layout, similar to Figure 2, will be provided after the initial survey has been completed.
- 2) A landfill characterization study described below will be performed after establishing a revised surveyed sampling grid on



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the site (Figure 2). Stakes will be used to locate and identify each sampling location.

A trackhoe will be used to excavate through the fill materials into native subsurface soils. Each pit will be logged in general accordance with the Unified Soil Classifications System and photographed. At each pit, the elevations of the existing surface, bottom of fill (top of native soils) and bottom of pit will be determined. If surface obstructions are present, excavation may occur on one/both sides of the obstruction. After all field sampling and measurements have been taken, the excavated material will be loosely placed into the pit.

A suggestion that a smaller backhoe be used to speed the work was examined. WTI/BHA excavation subcontractor, Wrights Excavating, was contacted. Mr. Jimmie Wright, President and Owner, stated that smaller equipment such as a Case 780 rubber-tired backhoe could have significant problems in excavating large pieces of wood, metal, concrete and similar materials. He estimated that the Case 780 could take two to three times (2-3x) longer for excavation than a trackhoe. In some cases, the smaller equipment might be unable to excavate through the fill.

This evaluation showed that the use of two trackhoes would reduce overall project costs. WTI/BHA proposes to use two trackhoes simultaneously for excavation. Two field engineers will be necessary for excavation monitoring and sampling. The environmental specialist would perform all fingerprint testing as later described.

Separate representative duplicate samples of the fill materials and the native subsurface soils will be obtained. Each sample will be placed into a 500-gram glass jar with teflon coated



lid. Each sample will be uniquely identified with a label, and chain-of-custody records will be maintained. All samples will be analyzed in general accordance with SW-846, U.S. Environmental Protection Agency document, "Test Methods for Evaluating Solid Waste."

A small portion of each sample will be field examined for hazardous waste characteristics. A copy of these procedures, Fingerprint Tests, is presented in Appendix B. All observations and readings will be recorded on a specially developed field activity report sheet. An example of a field activity report is presented as Figure 4. Any samples that could contain hazardous wastes as determined by the field screening should be analyzed using the protocols (Tier 1 and Tier 2) listed below.

<u>Tier 1</u>	<u>Tier 2</u>
GC/MS Solvent Screen	Physical Description
EP Toxicity - Metals (8)	Total Cyanides
Ignitability	Total Sulfides
Corrosivity (pH)	Specific Gravity
Reactivity	Percent Moisture

Each sample set taken along the north-south rows (1-8) will be composited into a single sample for analysis of the Tier 1 parameters. Thus, a single composite sample for fill material and a single composite sample of the subsurface native soils for each row will be submitted for analysis. The Tier 1 parameters will examine the waste for the most commonly found hazardous wastes. If the Tier 1 test for a given sample indicates that the waste is, or could be, hazardous; WTI will recommend that the Tier 2 analyses be performed.

The sum of the Tier 1 and Tier 2 analyses provide the required data for completion of hazardous waste profile sheet. This



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sheet provides necessary information on the hazardous wastes so that proper decisions on transportation/disposal can be made. The initial proposal suggested that all of the parameters be analyzed. Cost savings can be made using the two tier method. If a sample requires the Tier 2 analyses, the cost for that sample will approximate that as initially proposed; the time required for complete analysis will be approximately 21-25 days instead of 10 days.

All chemical analysis will utilize WTI's established quality assurance/quality control (QA/QC) procedures. These procedures are presented in Appendix C.

- 3) Cross-sectional diagrams will be prepared showing the depths of fill materials at the sampling pits. A boundary survey will be performed to delineate the horizontal extent of the landfill. The landfill volume will then be estimated.
- 4) Available disposal sites will be identified for the landfill materials. Information concerning distances and cost will be obtained, then the optimum disposal location(s) will be chosen.
- 5) A landfill removal monitoring program will be developed. The plan will include the monitoring of excavated materials, hazardous waste handling procedures, appropriate jobsite safety and health requirements to protect workers, nearby populations, and populations along transport routes to the new disposal sites. General information on WTI's Health and Safety Program is presented in Appendix D.
- 6) If hazardous wastes are found in the landfill characterization study, an appropriate landfill removal program including waste segregation will be developed. This program assumes that ADEQ will allow for excavation, transportation and disposal of hazardous wastes without extensive additional testing. This



could include investigation and determination of Potentially Responsible Parties (PRPs), public hearings and other related work. This program allows, if ADEQ approves, for the systematic excavation, transportation and removal of hazardous wastes as a portion of the overall project. WTI will ask appropriate ADEQ staff for their recommendations for this scenario during the permitting activities of this project.

If no hazardous wastes are found, a standby hazardous waste handling program will be designed and incorporated into the landfill removal monitoring program. These procedures will assume that no long-term investigations as outlined above will be required by ADEQ. It will be designed to allow for the orderly excavation of construction debris if a small amount of hazardous wastes are discovered. All procedures will reflect ADEQ requirements.

The FCD requested that WTI/BHA prepare an estimate of costs if hazardous wastes are encountered in this project. These costs would be incurred for additional excavations and testing to delineate more accurately any hazardous wastes. It would also fund the preparation of construction documents for removal of these wastes prior to excavation of the remaining wastes. Our itemized estimate is listed below:

1.	Excavation	\$ 4,000.00
2.	Field Sampling, Fingerprint Testing	\$ 3,000.00
3.	Analytical Chemistry, Tiers 1 and 2, 10-day est. 12 samples	\$ 7,800.00
4.	Project Management, Permitting, Coordination	\$ 4,000.00
5.	Construction Document Preparation	<u>\$20,000.00</u>
	SUBTOTAL	\$38,800.00

7) City, County and ADEQ notification/permitting requirements will



be determined and described. We will assist the FCD, if requested, in obtaining these permits. We will obtain all permit forms for the FCD. We will complete the forms and submit them to the FCD for submittal. No permit/review fees are included.

- 8) A removal plan will be developed. It will include excavation methods, equipment, disposal site(s), and haul routes.
- 9) An engineer's estimate for landfill removal will be developed. A separate estimate for each disposal site/haul route system will be prepared.
- 10) A Phase I summary report will be prepared. It will describe field activities and provide analytical data from the landfill characterization study. Landfill volume estimates will be provided. A time line schedule and duration of the removal contract will be provided. The landfill removal monitoring plan will be developed. The report will discuss the available disposal site/haul route options. Engineer's estimate for each option will be presented.
- 11) If requested by FCD, WTI/BHA will prepare the required plans and construction special provisions for removal of the Reed Landfill. The documents will meet the requirements described on pages 5 and 6 of FCD Scope of Work, Appendix A. If this phase of the project is not implemented, the contract will be closed after successful completion of the Phase I Summary Report.



### III. PROJECT ORGANIZATION AND PERSONNEL

To perform the required work in a timely and effective manner, we have exercised particular care in selecting the key personnel to manage and perform this work. Each of the key personnel has been selected for professional specialty and particular experience related to this work. Summaries of the expertise and work experience of the key personnel are presented in Appendix E. A project organization chart showing the responsibilities of the individuals on this project is also presented in Appendix E. The individuals shown on the organization chart will participate in this project. Any substitutions will be done with the concurrence of FCD's Project Manager.

The following subsections describe the project assignments proposed for each of the project team personnel.

#### A. Principal-in-Charge

Mohammad A. Latif, P.E. will serve as the project principal-in-charge. Mr. Latif retains the ultimate responsibility for the performance of the project personnel and the final results of the project.

#### B. Project Review Board

J.G. Bennett, P.E., and Richard Richards, P.G., will serve on the project review board. Mr. Bennett is the WTI President. Mr. Richards is the WTI Vice President responsible for environmental engineering services. The function of the review board will be to provide critical reviews of all technical and management aspects of the project.



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C. Quality Assurance Officer

Mr. William Borges is the Quality Assurance Manager for WTI's Environmental Engineering Division. He will review all written reports for technical clarity and accuracy. This will assist in the production of a quality Phase I summary report on time and within budget.

D. Project Manager

Wesley A. Shonerd, P.E. will serve as the Project Manager. Mr. Shonerd will manage all phases of the project and will be directly responsible to FCD. Mr. Shonerd will oversee all project coordination and scheduling, and will prepare or review all reports for FCD.

E. Field Services Manager

Mr. Patrick Murphy, C.P.G. will serve as the Field Services Manager and will report to the Project Manager. He will coordinate and manage all field activities including rubbish/soil sampling and field documentations.

F. Health and Safety Officer

Mr. Steven Barnes, I.H. will serve as the Health and Safety Officer. He provides health and safety guidance for the field engineers during sampling. He will also review the proposed landfill monitoring plan so that it reflects current standards and procedures.



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G. Discipline Leaders and Task Managers

These individuals will be responsible to the Project Manager and will perform the specialized discipline or task to which they are assigned. These professionals are well qualified in each particular specialty and possess the necessary expertise regarding technical requirements.



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#### IV. PROJECT SCHEDULE

The following project schedule is based on Section V of the FCD's scope of work.

#### PROJECT SCHEDULE

<u>Item</u>	<u>Calendar Days</u>
Notice to Proceed	0
Field Investigation	14
Initial Client Meeting	42
Initial Draft - Phase I Report	49
District Comments Rec'd.	63
Final Phase I (Hold 30-60 days)	77
If Go -	
Notice to Continue	107-137
90% Construction Documents	128-158
District Review of 90% Documents	142-172
Final Construction Document Submittal	156-186

An Estimated Progress Schedule showing the individual tasks is presented as Figure 3.



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V. ESTIMATED PROJECT BUDGET

The cost estimates for each task are listed below. They assume a 3.1 multiplier for WTI personnel:

Phase I

A Initial site survey, performed by  
Brooks, Hersey & Associates (BHA)

3-man Survey Crew	18 hrs. @ \$64.00/hr.	\$ 1,152.00
Survey Supervisor	9 hrs. @ \$39.00/hr.	\$ 351.00
Principal, R.L.S.	5 hrs. @ \$60.00/hr.	\$ 300.00
Principal, P.E.	4 hrs. @ \$60.00/hr.	\$ 240.00
Printcraft	est. \$26.00	\$ 26.00
Project Manager (WTI)	4 hrs. @ \$77.50/hr.	\$ 310.00
Mileage 60 @ \$0.40/mile		<u>\$ 24.00</u>

SUBTOTAL

\$ 2,403.00

B. Landfill Characterization Study

Excavations - Mitsubishi 280 trackhoe or equivalent, 2 total pieces, estimate 48 hrs. total @ \$150/hr.		\$ 7,200.00
Project manager, 4 hrs @ 77.50/hr.		\$ 310.00
Field Services Manager, 15 hrs @ \$77.50/hr.		\$ 1,163.00
Field Engineer - 2 total, soil logging, sampling, est. 55 total hrs. @ \$47.70/hr.		\$ 2,624.00
Environmental Specialist, fingerprint testing, est. 30 total hrs. @ \$47.70/hr.		\$ 1,431.00
Fingerprint testing equipment/supplies, \$75/day, est. 3 days		\$ 225.00
Mileage, est. 250 miles @ \$0.40/mi.		\$ 100.00
Analytical chemistry, Tier 1, 10 day analysis time, est. 16 @ \$450.00 ea.		\$ 7,200.00
Sampling containers, est. 220 @ \$3.00 ea.		<u>\$ 660.00</u>

SUBTOTAL

\$20,913.00



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C. Boundary survey, preparation of cross-sectional diagrams; estimations of landfill contents; Brooks, Hersey & Associates

3 Man Survey Crew	15 hrs. @ \$64.00	\$ 960.00
Survey Supervisor	9 hrs. @ \$39.00	\$ 351.00
CADD Operator	20 hrs. @ \$31.00	\$ 620.00
CADD Computer	20 hrs. @ \$35.00	\$ 700.00
Principal, R.L.S.	4 hrs. @ \$60.00	\$ 240.00
Principal, P.E.	14 hrs. @ \$60.00	\$ 840.00
Clerical Services	3 hrs. @ \$16.00	\$ 48.00
Printcraft	est. \$65.00	\$ 65.00
Project Manager (WTI)	4 hrs. @ \$77.50	<u>\$ 310.00</u>

SUBTOTAL

\$ 4,134.00

D. Disposal site/haul route study

Project Manager - 40 hrs @ \$77.50/hr.	\$ 3,100.00
Mileage, estimate 300 miles @ \$0.40/mi.	\$ 120.00
Graphics, photographs, est.	<u>\$ 200.00</u>

SUBTOTAL

\$ 3,420.00

E. Landfill removal monitoring program

Project Manager - 16 hrs @ \$77.50/hr.	\$ 1,240.00
Health & Safety Officer- 8 hrs @ \$77.50/hr.	\$ 620.00
Clerical/Drafting Services - 4 hrs @ 35/hr.	<u>\$ 140.00</u>

SUBTOTAL

\$ 2,000.00



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F. Permitting requirements

Project Manager - 16 hrs @ \$77.50/hr.	\$ 1,240.00
Regulatory Affairs Mgr.- 8 hrs @ \$77.50/hr.	\$ 620.00
Mileage, est. 200 miles @ \$0.40	<u>\$ 80.00</u>

SUBTOTAL \$ 1,940.00

G. Removal plan/engineer's estimate

Project Manager - 16 hrs. @ \$77.50/hr.	\$ 1,240.00
Plans/Specifications Coordinator 8 hrs @ \$77.50/hr.	\$ 620.00
Mileage, miscellaneous expenses, est.	\$ 150.00
Principal (BHA), P.E.- 11 hrs @ \$60	<u>\$ 660.00</u>

SUBTOTAL \$ 2,670.00

H. Phase I summary report

Project Manager - 24 hrs @ \$77.50/hr.	\$ 1,860.00
Project Principal, Review Board Members 15 hrs @ \$100/hr.	\$ 1,500.00
QA Officer - 8 hrs @ \$77.50/hr.	\$ 620.00
Clerical/Drafting, est. 16 hrs @ \$35/hr.	\$ 560.00
Photo developing, miscellaneous expenses	<u>\$ 100.00</u>

SUBTOTAL \$ 4,640.00

Subtotal Section A	\$ 2,403.00
Subtotal Section B	\$20,913.00
Subtotal Section C	\$ 4,134.00
Subtotal Section D	\$ 3,420.00
Subtotal Section E	\$ 2,000.00
Subtotal Section F	\$ 1,940.00
Subtotal Section G	\$ 2,670.00
Subtotal Section H	\$ 4,640.00
Phase I Estimated Total Cost	\$42,120.00



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Phase II

Construction Document Preparation

Project Manager (WTI) 20 hrs @ \$77.50/hr.	\$ 1,550.00
Plans/Specs Coordinator 30 hrs @ \$77.50/hr.	\$ 2,325.00
Mileage est. 200 miles @ 0.40	\$ 80.00
Construction Plan Preparation (BHA)	
CADD Operator 100 hrs @ \$31/hr.	\$ 3,100.00
CADD Computer 100 hrs @ \$35/hr.	\$ 3,500.00
Principal, P.E. 28 hrs @ \$60/hr.	\$ 1,680.00
Printcraft est. \$77	<u>\$ 77.00</u>

SUBTOTAL CONSTRUCTION PLAN

\$12,312.00

Prepare Special Provisions (BHA)

Principal, P.E. 95 hrs @ \$60	\$ 5,700.00
Clerical Services 27 hrs @ \$16	\$ 432.00
Printcraft est. \$110	<u>\$ 110.00</u>

SUBTOTAL SPECIAL PROVISIONS

\$ 6,242.00

PREPARE BIDDING SCHEDULE (BHA)

Principal, P.E. 14 hrs @ \$60	\$ 840.00
Clerical Services 2 hrs @ \$16	<u>\$ 32.00</u>

SUBTOTAL BIDDING SCHEDULE

\$ 872.00

PHASE II ESTIMATED TOTAL COST

\$19,426.00

Phase I Estimated Costs \$42,120.00

Phase II Estimated Costs \$19,426.00

TOTAL PROJECT ESTIMATED COSTS \$61,546.00



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The total estimated project cost is \$61,546.00. The actual cost of this project will be progressively billed each month on a time-and-materials basis according to the current fee schedules.

Our estimate does not include charges for additional client meetings, additional consultation, or other services not specifically stated in the body of this proposal. These charges would be added to the cost, if applicable.

WTI attempted to obtain professional liability insurance with an aggregate unit of \$ 5 million. Our insurance carrier does not offer this insurance at that coverage level.

WTI/BHA specifically requests that retention monies withheld for Phase I work be paid to WTI after Phase I has been completed and accepted by FCD.

WTI/BHA specifically recommends a survey/volume determination be provided after removal of the landfill. This can be used for payment requirements. The estimated cost for this Phase III is \$1,332.00.

Should Western Technologies Inc. be selected to enter into a contract, this proposal shall enhance FCD's scope of work and define the contract price set forth in the agreement. The FCD will control the scope of work based upon the scope of work document.

Should any provisions of the contract agreement conflict with the provisions of this proposal, the provisions and language of the proposal shall be controlling, unless modified in writing and signed by both parties.

We appreciate the opportunity to present our proposal for your consideration. This proposal remains the property of Western Technologies Inc. and all rights are reserved. Please call us at (602) 437-3737 if you need any additional information.



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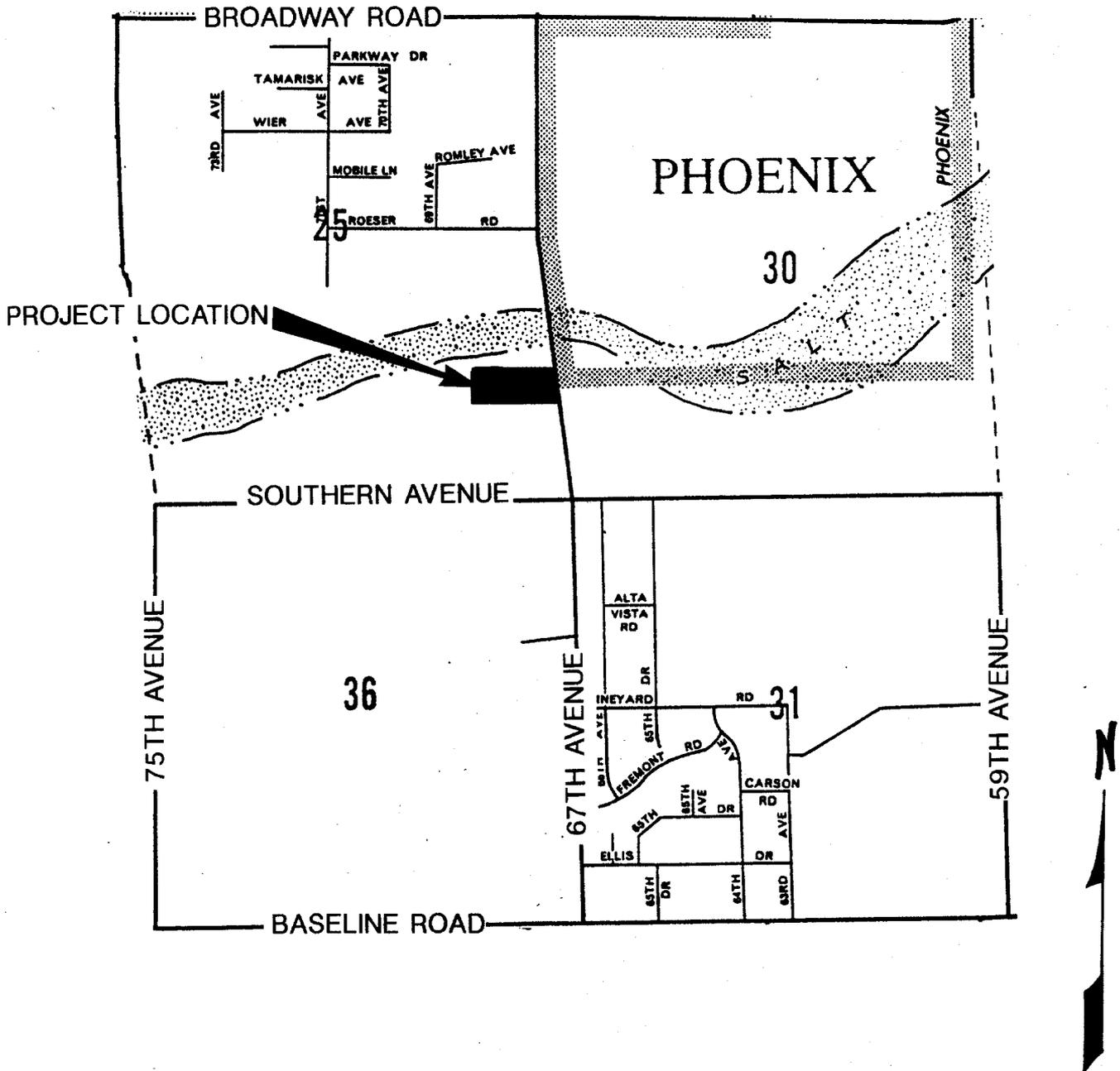
CURRENT FEE SCHEDULE

Project Principal-in-Charge -----	\$100.00
Review Board, per hour -----	\$100.00
Project Manager (WTI) -----	\$ 77.50
Health and Safety Officer -----	\$ 77.50
Field Services Manager -----	\$ 77.50
Quality Assurance Officer -----	\$ 77.50
Regulatory Affairs Manager -----	\$ 77.50
Field Engineer -----	\$ 47.70
Environmental Specialist/Scientist -----	\$ 47.70
Clerical/Drafting -----	\$ 35.00
"Fingerprint Testing", per day -----	\$ 75.00
Mileage, per mile -----	\$ 0.40
Analytical Chemistry, per Tier 1 & Tier 2, 10 day TAT ---	\$650.00
Analytical Chemistry, Tier 1 only, 10 day TAT -----	\$450.00
Analytical Chemistry, Tier 2 only, 10 day TAT -----	\$150.00
Sampling Containers, each -----	\$ 3.00
Miscellaneous Expenses -----	WTI cost plus 10%
BHA Personnel, per Open Contract Unit Rates	



# Reed Landfill Removal Study

Maricopa County Flood Control District  
Vicinity Map  
Figure 1



NOT TO SCALE

PROPOSAL NO. 2178A474

REVIEWED	W. SHONERD, P.E.
PREPARED	MAXWELL

**WESTERN TECHNOLOGIES INC.**  
The Quality People

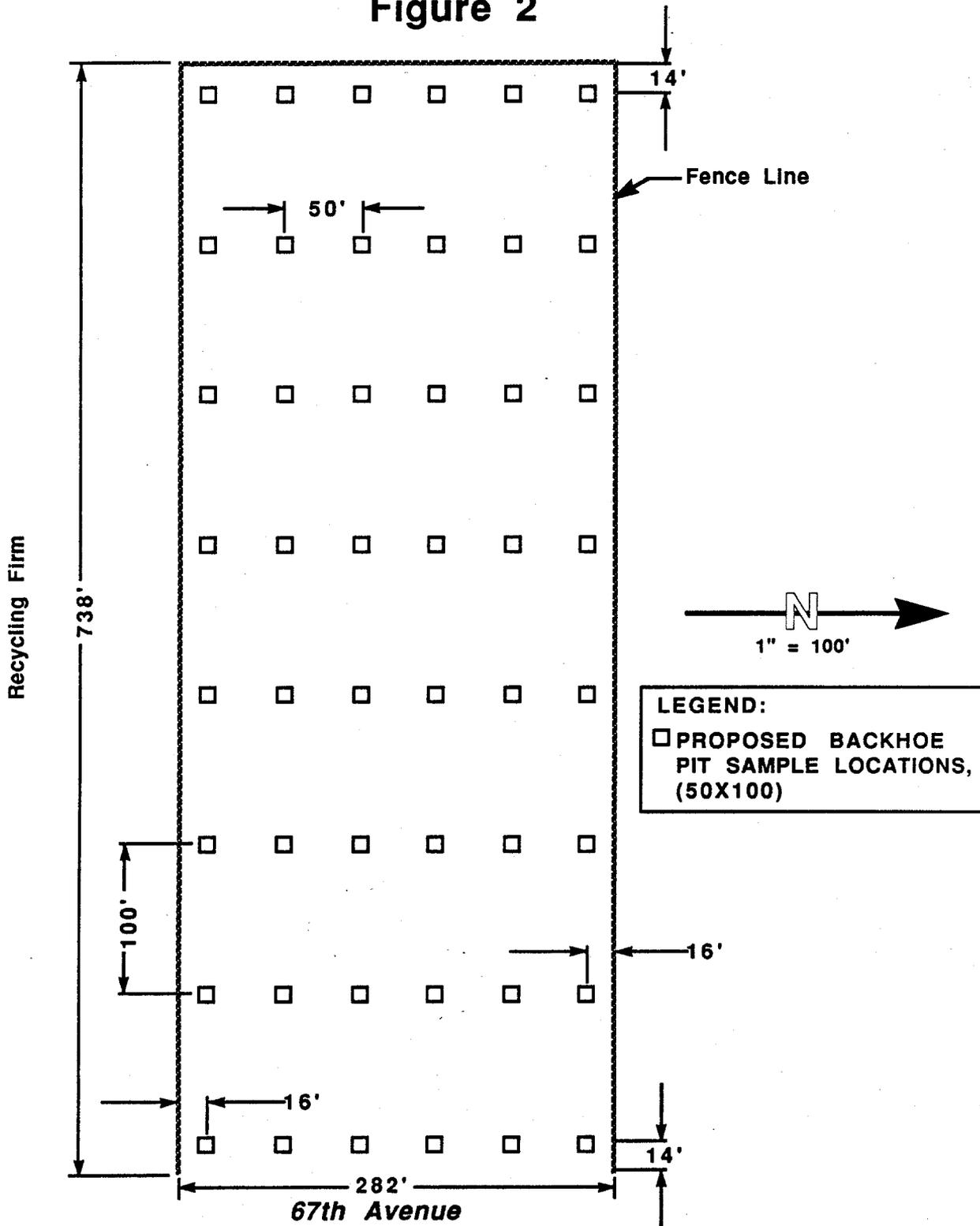


# Reed Landfill Removal Study

## Maricopa County Flood Control District

### Proposed Sampling Grid

#### Figure 2



PROPOSAL NO. 2178A474

REVIEWED	W. SHONERD, P.E.
PREPARED	MAXWELL

**WESTERN TECHNOLOGIES INC.**  
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# Flood Control District of Maricopa County

## Reed Landfill Removal — Project Schedule

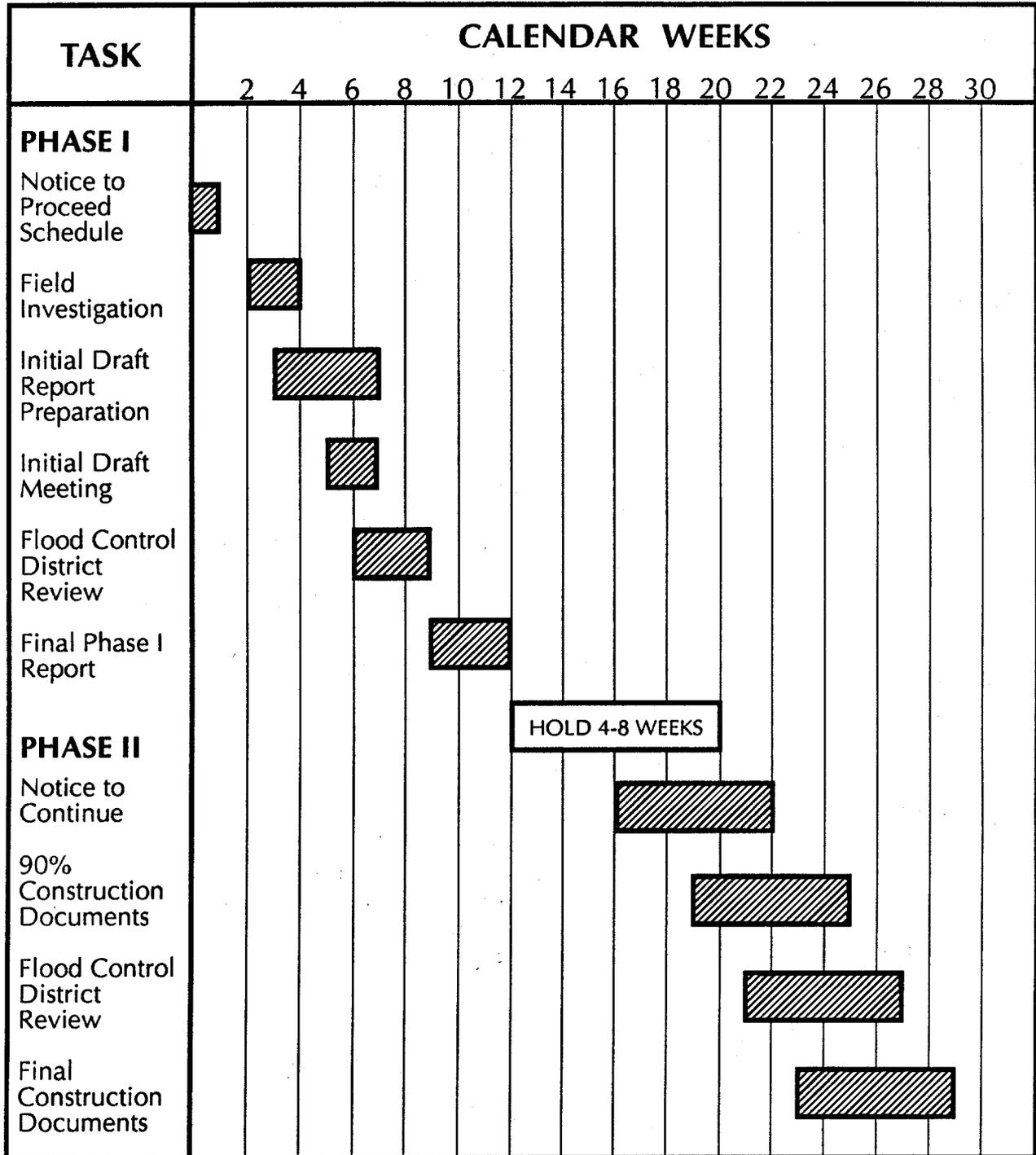
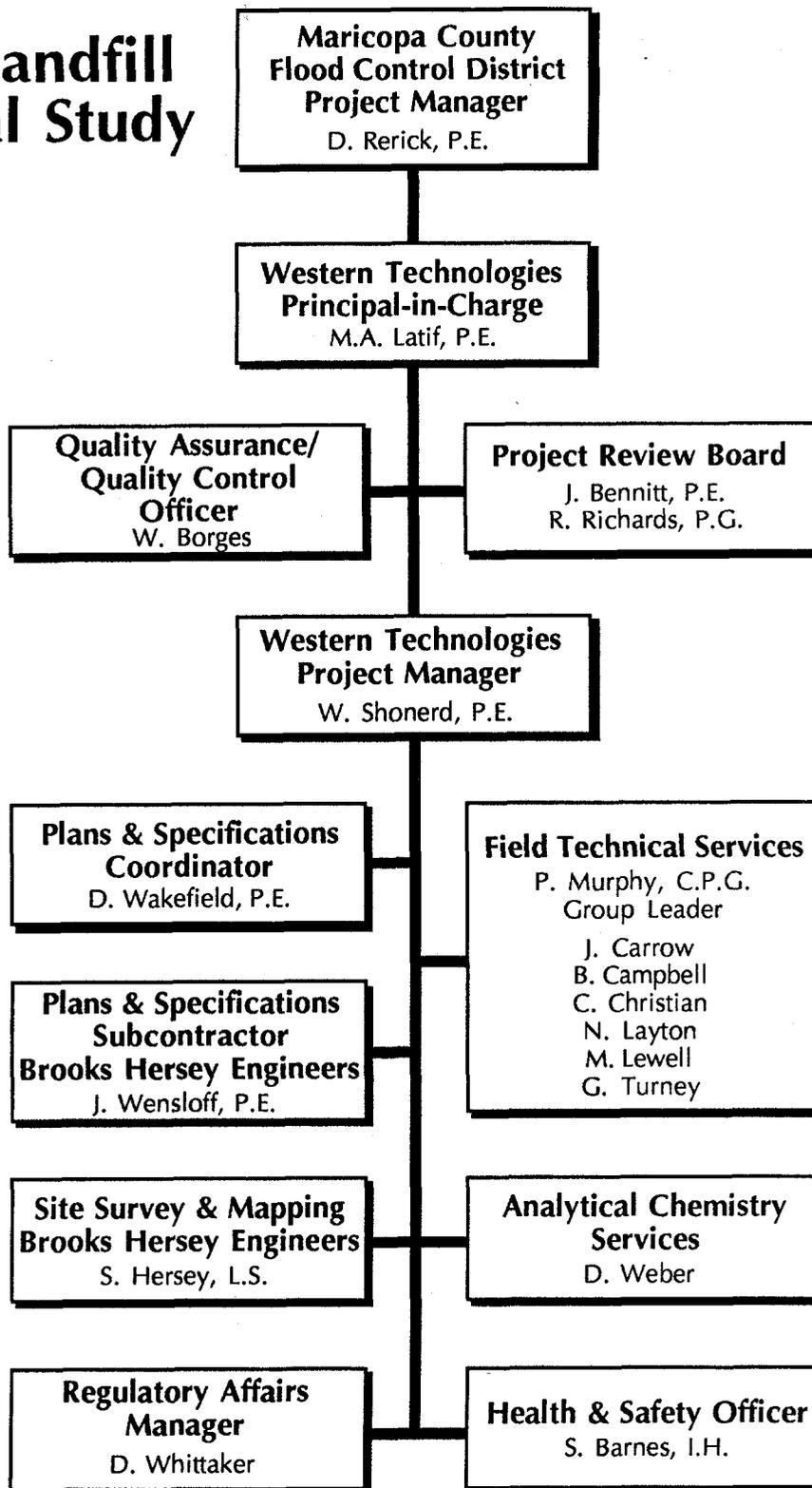


FIGURE 3



# Reed Landfill Removal Study



**J. G. BENNITT, P.E.**  
President

**Western Technologies Inc.**  
Phoenix, Arizona  
(1984 - Present)

Chief Executive Officer, administering the operation of 12 branches of Western Technologies in the states of Arizona, Nevada, New Mexico and Utah. Member of the Board of Directors.

(1978 - 1984)

Vice President responsible for developing and accomplishing long and short term objectives established for the Phoenix branch. Managed marketing direction, technical proficiency and production of all professional services provided. Consultant in materials engineering and member of the Board of Directors.

(1970 - 1977)

Vice President for material engineering, managing materials engineering services, personnel and operations. Divisional operations included chemical engineering, non-destructive testing, materials engineering and calibration services. Also planned resources, budgeting development and coordinated all activities, policies, systems and procedures relating to operations. Acting Chief Material Engineer supervising asphalt and portland cement concrete technology, aggregate and soil testing, special engineering and inspections. Member of the Board of Directors.



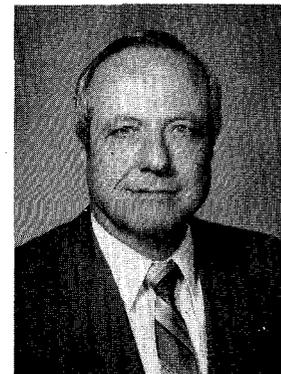
**WESTERN TECHNOLOGIES INC.**

**Janes/Tri-Counties Laboratories, Inc.**  
Santa Barbara, California  
(1964 - 1970)

Vice President and General Manager in charge of all materials, civil and geotechnical studies performed by branch office. Provided services to owners, developers and builders to enable selection of safe and economical foundation systems; reasonable and safe development of grading in level and hillside topography, and investigation services to recommend repair and salvage of failures in slopes and structures. Responsible for exploration and identification including field mapping of faults, formations and groundwater; analysis and prediction of soil and rock behavior under normal and induced environments and preparation of reports relating to the geological and civil engineering aspects of projects.

**Western Technologies Inc.**  
Phoenix, Arizona  
(1958 - 1961)

As Staff Engineer analyzed and determined depths and types of foundations for all types of structures; materials for compacted fills; expansive soil properties; groundwater; stability of slopes of rock and soil, excavation and embankment properties; sites for construction; effects of seepage, and location of construction materials.



#### **EDUCATION**

B.S.C.E., California State University at San Jose, 1958

#### **REGISTRATIONS**

Professional Engineer - California, Arizona, New Mexico and Colorado  
ASME/ACI level III Inspection Engineer

#### **MEMBERSHIPS**

American Society of Civil Engineers  
Arizona Consulting Engineers Association  
American Council of Independent Laboratories (Representative)

**GENERAL CONDITIONS**

Flood Control District of  
Project: Maricopa County

Ref. No.: 2178A474 Revision No. 1

**1.0 Workmanship**

Western Technologies Inc. (hereinafter called WT) will perform its services in accordance with local generally accepted engineering and testing practices. No other expressed or implied warranty or representation, either written or oral is made, included or intended in our proposals, contracts or reports.

**1.1 Utilities**

~~When performing its work, WT will take all reasonable precautions to avoid damage or injury to subterranean structures or utilities. Client agrees to hold WT harmless for any damages to such subterranean structures or utilities which are not called to WT's attention and correctly shown on the plans furnished.~~

**1.2 Safety**

Work will be performed only under safe conditions. Client may be charged for safety or security measures required by hazardous job conditions.

**1.3 Samples**

WT will discard all samples thirty (30) days after submission of our report. Further storage or transfer of samples after that time can be made upon written request and at Client's expense.

**1.4 Manner of Payment**

Invoices are due and payable upon receipt and are delinquent thirty (30) days after date of invoice. Work in progress will be billed monthly for portions completed and upon job completion for final balance. If payments are not made in full prior to delinquency, Client agrees to pay interest on the unpaid amount at the highest allowable rate from delinquency date. All payments received shall first be credited to payment of interest, and then to the principal balance.

**1.5 Ownership of Documents**

WT will consider all reports to be confidential property of Client. Upon payment of its charges WT will distribute reports to those persons, organizations or agencies specifically designated by Client or his authorized representative. All boring logs, field data, field notes, laboratory test data, calculations, estimates and other documents prepared by WT shall remain the property of WT.

**1.6 Insurance**

For your benefit, WT maintains the following insurance and amounts: Workman's Compensation, statutory limits; General Liability Insurance, \$100,000/\$300,000; Blanket Excess Liability, \$10,000,000; Automobile Liability, \$300,000; Professional Liability, \$1,000,000.

**1.7 Limits of Liability**

WT shall not be liable for loss, damage, injury or harm occasioned by or arising from any acts by the Client, the Client's officers, employees, agents or subcontractors. Client agrees that WT shall not be liable for any of Client's losses, damages, injury, harm of claims, and costs, regardless of origin, and however caused, beyond the limits and amounts of the insurance set forth in 1.6 above.

**1.8 Litigation**

In the event of litigation between the parties to this Agreement, WT shall be entitled to all reasonable costs incurred, including staff time, court costs, attorney fees, and other related expenses, if it is found to be the prevailing party.

**1.9 Subpoenas**

The Client is responsible, after notification, for payment of time and expenses resulting from our required response to subpoenas issued in conjunction with our work. Compensation will be based on schedules in effect at the time the subpoena is served.

**1.10 Assigns**

Neither Client nor WT may delegate, assign or transfer his duties or interest in this Agreement without the written consent of the other party.

**1.11 Indemnity**

(As per attached)

The foregoing proposal and the General Conditions have been read and are hereby accepted.

\_\_\_\_\_  
COMPANY, ORGANIZATION

\_\_\_\_\_  
SIGNATURE (OFFICER, PARTNER OR OWNER)

\_\_\_\_\_  
DATE

\_\_\_\_\_  
(PLEASE TYPE OR PRINT NAME AND TITLE)

