

10-1984

Evaluation of Proposals for an Electronic Data Processing System for the Papio Natural Resources District

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EVALUATION OF PROPOSALS
FOR AN
ELECTRONIC DATA PROCESSING SYSTEM
FOR THE
PAPIO NATURAL RESOURCES DISTRICT



Center for Applied Urban Research
University of Nebraska at Omaha



October, 1984

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Big Sky Data Systems

Big Sky Data Systems (BSDS) is a small, relatively young software house located in Billings, MT. Serving governmental clients since 1979, 22 governmental references are provided.

Initial (first-year) hardware proposed is an Alpha Microsystems (1072V-33) 16/32 bit multiuser system with 512K of main memory, 70MB of hard disk storage, VCR backup, two work stations, and two printers (one correspondence quality). The expanded seven-user system is configured with 512K of additional memory, five additional work stations and 6 port I/O board. According to the vendor the expanded system can be configured with up to 18 peripherals without performance suffering. Additional disk storage may be needed and additional printers may be desired. The operating system is AMOS-L.

All specified software is proposed, except data base management and word processing (although available). The vendor claims that text formatting is possible without additional software. Office management software is provided through BSDS, and engineering software is available from Optical Systems Research, Inc. of Corpus Christi, Texas. The proposed engineering software appears to address the four models specified in the RFP but the cost of proposed software is only an estimate.

Hardware and software support are available. Hardware support (including backup system) is available from Digitronix, Inc. of Omaha for a monthly fee (and at a reduced rate if paid annually) after an initial 90 day warranty. On-site maintenance is recommended, with a four-hour response time during regular business hours. Software support is proposed by three separate bureaus. Maintenance of office management software (Alpha-BARS) is available through BSDS during regular office hours by a direct modem hookup for a

monthly or annual fee. However, questions related to accounting and conversion support would be handled by Arthur Anderson and Company of Omaha as needed at a rate of \$40 per hour. Finally, maintenance of engineering software is available as needed on an hourly charge basis only through Optical Systems Research during regular business hours with same day response. One time assembly and installation fees are charged and included in the bid analysis.

Training is available either on site or in Billings, MT, for office management software, and on site or in Corpus Christi, TX for engineering software. Training time is specified as 13 days for office management and 10 days for engineering. The costs incorporated below are for training away from Omaha.

Software proposed:

Financial Management: Alpha-BARS, including,
 System Management
 General Ledger
 Accounts Payable
 Accounts Receivable/Utility billing
 Budget Management
 Fixed Assets
 Payroll: Alpha-BARS Payroll
 Spreadsheet: Alpha-CALC
 Data Base Management: not bid but available at additional cost
 Word Processing: partial package (View Text) included; full package
 available at additional cost
 Engineering: All four models addressed; not available from Hydro

Hardware proposed: Alpha micro (16/32 bit, AMOS-L Operating System)

First-Year -

512K Main Memory
 70MB Disk Storage
 2 work stations
 2 printers

Second-/Third-Years -

512K Main memory expansion
 6 terminal I/O Board
 3 work stations

Fourth-/Fifth-Years -

2 work stations

BIG SKY SYSTEM COST SUMMARY¹

Phases	Year	Hardware	Hardware Maintenance	Software	Software ² Maintenance	Training ³	Other ⁴	Total
INITIAL SYSTEM 2 terminals 2 printers 70 MB Disk	85	39,233	4,792	33,500	1,800	2,060	1,845	83,230
ENG EXPANSION 3 terminals Mem Exp (512K) 6 I/O Port	86		4,792		1,800			
	87	5,243	5,078.89		1,800			
OFFICE EXPANSION 2 terminals	88		5,078.89		1,800			
	89	1,500	5,270.15		1,800			
TOTAL		45,976	25,011.93	33,500	9,000	2,060	1,845	117,392.93

¹Lease purchase option with a funding out clause is available.

²Without program maintenance from Arthur Anderson (\$40.00 per hour) and engineering maintenance from OSR at an hourly rate.

³Training cost quoted includes one person; others trained at additional cost.

⁴Other includes installation and system assembly.

The Computer Works

The Computer Works is an OEM and software vendor located south of Omaha in Bellevue, NE. Computer Works has been in business four years and has a staff of four persons. References are offered from two cities in West Virginia, and a private firm in Ohio. Computer Works states that it also services 26 systems at 16 U.S. air bases nationwide.

Computer Works proposes a 16-bit Data General Ten multiuser system. The initial (first-year) configuration includes 512KB of main memory, single dual-sided double-density floppy disk drive with 368KB of storage per disk, single 15MB hard disk, tape cartridge backup, two work stations, two printers (each dual mode 160/40 cps dot matrix/correspondence quality printers), and 1,200 baud modem. The expanded seven-user system specifies an additional five work stations and an Input/Output card (required to configure the system beyond 3 terminals). Additional printers are available but not specified in the proposal. The operating system is RDOS but MS/DOS is available for an additional \$30.00.

Communications with the Natural Resources Commission's system (IBM 3081) to access its data base is possible via modem using 3780 bisynchronous emulation at a cost of \$650.00.

All specified software is proposed, though project costing and engineering software is to be custom written (a relatively expensive solution for Papio NRD's needs). Hydro engineering software is not available for this system. The source of spreadsheet and word processing software is the Data General Corporation. Financial Management and Payroll functions (the MUNIS package) are provided by Computer Works.

Hardware and software support are available. On-site hardware support is recommended from Computer Works. Service is available for a fee during

regular business hours (and on Saturdays in an emergency) with a four-hour response time. Software support is available from Computer Works during regular business hours with immediate telephone response. The vendor stated that software maintenance for the first year is included in the software cost, though a fee of \$40.00 per hour would be required for software modification, and maintenance beyond the first year.

Two days of on-site training is suggested with system acquisition, though the vendor states a willingness to provide more than 2 days initially if needed. Additional training would be available at a rate of \$35 per hour. While the vendor states that training beyond 2 days "will probably not be necessary," experience suggests that there will be a need for training beyond two days.

The vendor also stated that delivery and installation costs are included in the system purchase price.

Software proposed:

Financial Management/Payroll: MUNIS by ComputerWorks, including:

- General Ledger
- Budgeting
- Accounts Payable
- Accounts Receivable
- Purchase Order Processing/Tax Module
- Utility Billing
- Report Writer
- Payroll

Spreadsheet: Compucalc by Data General

Word Processing: Formatext by Data General

Project costing: To be written

Engineering: To be written; not available from Hydro

Hardware: Data General Ten (16 bit, RDOS Operating system)

First-year -

- 512KB Main memory with floppy disk drive
- 15MB Disk storage
- 2 work stations
- 2 printers (both dual mode dot matrix/correspondence)
- Modem

Second-/Third-year -
 3 work stations
 4-Channel I/O Card

Fourth-/Fifth-year
 2 work stations

COMPUTER WORKS SYSTEM COST SUMMARY¹

Phases	Year	Hardware ²	Hardware ³ Maintenance	Software ⁴	Software ⁵ Maintenance	Training ⁶	Other ⁷	Total
INITIAL SYSTEM 2 terminals 2 printers 15MB Disk	85	16,720	408	23,595				40,723
ENG EXPANSION 3 terminals Added I/O Card	86		408					
	87	4,620	408					
OFFICE EXPANSION 2 terminals 1 printer	88		408					
	89	7,280	750					
TOTAL		25,620	2,352	23,595				51,667

¹Prices good for 120 days from bid.

²Additional disk space and programming may be desired but is not costed here; in addition, a word processing terminal will probably need to be added in the third phase.

³Maintenance on hard disk and printers only.

⁴Additional Engineering Software may be desired; costs would exceed the \$6,000 included.

⁵Software maintenance would be hourly as needed.

⁶Training beyond 2 days would result in additional costs.

⁷Does not include supplies or site modification costs.

Database Systems Corporation

Database Systems Corporation is a software vendor located in Omaha, NE. Database has been in operation for 3 years, and employs 20 full-time personnel. References are offered from four schools/educational organizations, all in Iowa.

Proposed hardware are 8-bit Apple IIe microcomputers tied together by a local communications network, Omninet, produced by the Corvus Corporation. The vendor states that the system operates as a true multi-user computer. The initial (first-year) system includes two microcomputers, each with 128KB of main memory, dual two-sided single-density floppy disk with 140K capacity, work station, and printer (one with an 180 cps Imagewriter dot-matrix printer, and the other with an 18 cps Epson Convex letter quality printer). In addition, a 10MB Corvus hard disk is included with "disk mirror" and "transporter card" (to link the two microcomputers through Omninet), as well as a VCR tape backup. Backup prescribed is via floppy disk. The expanded seven-user system is configured with five additional microcomputers each with 128K main memory, dual floppy disk drive, work station, 180 cps Imagewriter dot-matrix printer, Omninet cards, and cables, and the addition of a Corvus 20MB hard disk with tape backup. The specified operating system is Apple DOS 3.3.

Communications with the Natural Resources Commission's system (IBM 3081) is possible by adding a "Appleline box" (hardware) and modem at a cost of \$1,745.

All specified programming is proposed, except engineering software which is unspecified and is estimated in cost. Most software was written by WOS Data Systems, Inc., of Colby, KS. The spreadsheet software is Multiplan from Microsoft, and word processing is Word Juggler by Quark, Inc. Engineering software is available through HydroSystems, Inc.

10/12/81

Hardware and software support are available. On-site hardware support is recommended for a fee through Database Systems with service during regular business hours. Response time is immediate, and a loaner is available if repair becomes necessary. Maintenance of WOS software is available for an annual fee by telephone connect during regular business hours with immediate response time. Software other than WOS would be maintained by Database Systems during regular business hours; user assistance and software replacement is offered for an hourly fee.

Training for WOS software is offered out of Colby, KS over one week for a fee plus travel. Training for other software is estimated as 3 days and is offered at a daily rate in Omaha.

Software Proposed

Financial Management:	WOS Fund Accounting by WOS Dta Systems, Inc.
General Ledger	
Revenue/Expenditure	
Purchase Order/Voucher	
Payroll	
Personnel Records	} WOS Base by WOS Data Systems, Inc.
Utility Billing	
Database file Management	
Spreadsheet:	Multiplan by Microsoft
Word processing:	Word Juggler by Quark, Inc.
Engineering:	Unspecified; available through Hydro

Hardware: Apple IIe microcomputers with Omninet network
(8-bit, Apple-DOS 3.3 Operating System)

First-year -

- 128KB main memory per microcomputer (work station) with dual floppy disk drives
- 10MB disk storage - Corvus hard disk with tape backup
- 2 work stations
- 2 printers (one dot matrix and one letter quality)
- Corvus "card" and "mirror" to acomodate Omninet

Second-/Third-Years -

128K added memory per microcomputer
 20MB disk storage - Corvus hard disk with tape backup
 3 work stations
 3 printers (dot matrix)
 Corvus hardware for Omninet

Fourth-/Fifth-Years -

128KB added memory per microcomputer
 2 work stations
 2 printers (dot matrix)
 Corvus hardware for Omninet

DATABASE SYSTEM CORP. SYSTEM COST SUMMARY

Phases	Year	Hardware ²		Software ³	Software		Other ⁴	Total
		Hardware	Maintenance		Maintenance	Training		
INITIAL SYSTEM 2 terminals 2 printers 10MB	85	10,695	820	12,500	600	1,480	_____	26,095
ENG EXPANSION 3 terminals 3 printers	86		820		600			
	87	16,090	1,680		600			
OFFICE EXPANSION 2 terminals 2 printers	88		1,680		600			
	89	<u>5,980</u>	<u>1,920</u>	_____	<u>600</u>	_____		_____
TOTAL		32,765	6,920	12,500	3,000	1,480		56,665

¹Includes printer per work station; though the system can operate with fewer printers.

²Includes maintenance on hard disk and printers only; CPU and monitor maintenance would be \$412 and \$36.00 annually, respectively.

³Includes Hydro engineering software; maintenance also included.

⁴Vendor states there will be no charges for delivery or installation.

Hydro Systems, Inc.

Hydro Systems, Inc. is a software vendor with home office located in Woburn, MA. Hydro has been in business since 1980 and employs six personnel. A lengthy list of users is provided, with primary references including an engineering firm (operating on Apple 2+ hardware), a town in Massachusetts (on DEC hardware), and two Resource Conservation Districts (one in Iowa on Apple 3 hardware and one in California on a Victor 9,000 system).

No hardware is offered by this proposal. Ordinarily the lack of proposed hardware would constitute a non-response to the Paio N.R.D.'s R.F.P. However, the proposed software could be used with other proposed systems, such as those which have not offered engineering programming.

Proposed engineering software addresses all four models specified in the R.F.P. Draincalc is offered for models one and four and Benchmark is offered for models two and three. A plotting package is also available. The vendor states that software is operational on Apple, TRS-80, IBM/PC and other MS/DOS and CP/M hardware. Operators' manuals are provided.

The software requires 128K, 5 1/4" or 8" floppy disk drive and 80-column printer to operate. Software support is available at minimal cost during regular business hours with immediate response via telephone. User assistance, program replacement, and updates are included with the maintenance contract.

System Cost Summary:

Draincalc	\$1,500.00
Benchmark	\$1,500.00
Annual maintenance	\$ 100.00 total per year
Total for five years	\$3,500.00

Information Processing, Inc.

Information Processing, Inc. is an OEM located in Omaha, NE. They have been in business two years and employ four persons. Three business and one educational references are offered in Omaha, NE.

Proposed hardware is a 32/16 bit Fortune XP multiuser system. The initial (first-year) configuration consists of 512KB of main memory, single dual-sided double-density floppy disk drive with 800KB of storage per disk, 20MB Winchester hard disk, floppy disk backup, four port controller for multiuser capability, two work stations, and two printers (one 50 cps correspondence quality, and the other 120/200 cps dot matrix). The expanded seven-user system proposes 512KB additional main memory, 30MB added disk storage, and five work stations. No additional printers are specified, though they may be desired. As configured, the Fortune system can be expanded to a maximum of 12 peripheral devices (work stations, printers, etc.), though the system may experience a loss in response time with 12 peripherals.

The vendor states that communications with the Natural Resources Commission for access to its data base is possible with emulation software at a cost of \$295.00.

Programming is only partially specified. A key package for office operations, fund accounting, is unspecified and the cost is estimated. Other office software--accounts receivable, accounts payable, spreadsheet (Multiplan), word processing (Fortune Word), and payroll--is specified from Fortune of Redwood City, CA. The data base manager specified is Sequitur, from Pacific Software of Berkeley, CA. Engineering functions are recommended for service bureau handling through HDR Systems, Inc., of Omaha, NE. HDR offers a full range of engineering services but costs are indeterminate before the fact and may vary (likely increase) over time. Hydro engineering software will not operate on the Fortune system.

Hardware and software support are available. Hardware is covered by a 90-day warranty. On-site hardware support is offered through Information Processing during regular business hours with two- to four-hour response time. Software support is also offered through Information Processing. Software is covered by a user-assistance 90 day warranty, and maintenance beyond 90 days is available for an annual fee during regular business hours with a response time of 48 hours.

Training for all but engineering services is specified as 12 days for a fee at the vendors location in Omaha.

An additional consideration in this case is that, while Fortune is a heavily financed company, it has shown a "sluggish financial performance" (Data Pro, 1983).

Software proposed:

Financial Management

Fund Accounting: unspecified and cost estimated

Accounts Receivable : by Fortune

Accounts Payable: by Fortune

Payroll: by Fortune

Spreadsheet: Multiplan by Fortune

Data Base Manager: Sequiter by Pacific Software

Word Processing: Fortune Word by Fortune

Engineering: unspecified; through HDR Systems

Hardware: Fortune 32:16 (32:16 bit, UNIX Operating System)

First-Year -

512KB of Main Memory with single floppy disk

20 MB disk storage (Winchester)

2 work stations

2 printers (one dot matrix and one correspondence)

Second-/Third-Years -

512KB main memory enhancement

30MB added disk storage

4-port controller

3 work stations

Fourth-/Fifth-Years -

2 work stations

INFORMATION PROCESSING, INC. SYSTEM COST SUMMARY

Phases	Year	Hardware	Hardware Maintenance ¹	Software ²	Software ² Maintenance	Training	Other ³	Total
INITIAL SYSTEM 2 terminals 2 printers 20 MB Disk	85	13,880	1,359 ^a	9,070	1,200 ⁴	1,200	75.	26,784
ENG EXPANSION 3 terminals	86		1,359		1,600			
Mem Exp. (512K) 30MB Disk 4 port controier	87	13,470	3,458 ^b		1,600			
OFFICE EXPANSION 2 terminals	88		3,458		1,600			
	89	2,990	4,058 ^c		1,600			
TOTAL		30,340	13,692	9,070	7,600	1,200	75.	61,977

¹See a,b and c.

^a20MB Disk and 2 printers only.

^b50MB Disk and 5 printers only.

^c50MB Disk and 7 printers only.

²Engineering not included; Hydro software is not available.

³Delivery cost.

⁴Nine months cost.

Norco Data Systems, Inc.

Norco Data Systems, Inc. is an OEM specialized in financial software with 7 personnel and operating out of offices in Omaha and Norfolk, NE. While it has operated as an OEM for 2 years, the principals have worked with DEC for 8 years. References provided include three commercial users and one city.

Initial (first-year) hardware proposed is a Digital Equipment Corporation Micro PDP/11 multi-user system with 512KB of main memory, 31MB hard disk storage, dual floppy disks with each work station, 60 MB tape backup, two work stations, and two printers (one dot matrix and one correspondence quality). The expanded seven-user system is configured with an additional 512KB of main memory, 31MB of disk storage, an interface board (to enable the system to operate with more than six peripherals), five work stations, and one correspondence-quality printer. Expansion beyond six peripherals requires the interface board and expansion can continue to a maximum of 14 peripherals. However, the vendor recommends no more than 12 peripherals; beyond that number, the response time of the system slows. Additional printers may be desired, and color monitors are available at additional cost.

Communications with the Natural Resources Commission's system (IBM 3081) is possible via a 3780 bicynchronous emulator at a cost of \$600.00.

All specified office management software is proposed. Financial management software is written by Compu-Share, word processing and data base management by Digital, and engineering is available through third parties. Engineering software is available, although unspecified, and cost is only estimated. (A source manual was included with the proposal). Hydro engineering software will not operate on this system.

Hardware and software support are available. Hardware support is available from Digital in Omaha for a monthly fee, after an initial 90 day warranty. On site maintenance is recommended, with 2-hour response time

during regular business hours. (Extended hour coverage at additional cost is available.) Software support is available from Norco for applications programs, and from Digital for operating system and utilities, both in Omaha. Office management software is warranted for one full year and maintenance is during regular business hours with a four-hour response time. Maintenance on engineering software is estimated at 12 percent per year.

Training is included in the cost of operating system (four hours) and each of the office management applications (eight hours each). Additional training is available on site (\$35 per hour) or bi-monthly in Lubbock, TX (without charge for the first trainee). Training for engineering applications is not specified.

Software proposed:

Financial Management:

General Ledger and Financial Accounting
Accounts Payable
Accounts Receivable
Payroll Check Writing

"A to Z" Integration:

Word Processing
Data Base Management
Data Inquiry
Business Graphics

Spreadsheet - Supercomp 20

Engineering: Estimated but not specified; not available from Hydro.

Hardware Proposed: Digital Micro PDP/11 (16 bit, RSX Operating System)

First-Year -

512K Main Memory
31MB disk storage
2 work stations
2 printers

Second-/Third-Years -

512K main memory expansion
31MB disk storage expansion
Interface board
3 work stations

Fourth-/Fifth-Years -

2 work stations
1 printer

NORCO SYSTEM COST SUMMARY

<u>Phases</u>	<u>Year</u>	<u>Hardware</u>	<u>Hardware¹ Maintenance</u>	<u>Software²</u>	<u>Software Maintenance</u>	<u>Training⁴</u>	<u>Other⁵</u>	<u>Total</u>
INITIAL SYSTEM 2 terminals 2 printers 31MB Disk	85	24,950	1,044	18,580	_____	_____	950	45,524
ENG EXPANSION 3 terminals 512K mem exp. 31MB Disk Interface	86		1,044		2,186			
	87	11,135	1,440		2,586		150	
OFFICE EXPANSION 2 terminals 1 printer	88		1,440		2,586			
	89	<u>4,985</u>	<u>1,764</u>	_____	<u>2,586</u>	_____	_____	_____
TOTAL		41,070	7,380	18,580	9,944	--	1,100	78,074

¹Disk and printer maintenance only.

²Includes an estimate of available programming for engineering.

³Software is under warranty the first year; thus, no maintenance fee.

⁴Training of 8 hours per package included with purchase price.

⁵Other includes freight and insurance fees.

Wang Laboratories, Inc.

Wang Laboratories, Inc., is an established hardware vendor, and among the Fortune 500 companies. Wang entered the personal/business computer market in 1983. Wang's proposal was prepared and submitted from its home office in Lowell, MA, and follow-up information was acquired from a local sales representative. The local office had 17 personnel--4 sales, 4 customer support and 9 engineers. Local references offered include two commercial clients, the Nebraska Department of Disability Service, and an Iowa state office in Council Bluffs.

Proposed hardware is the 16-bit Wang Professional Computer PC-003B. The initial (first-year) configuration consists of two single-user systems with ability to share disk space and peripherals. The expanded seven-user system proposed is configured using Wang's L.I.O. (local interconnect option) feature which networks the PCs. The first-year system includes two micro-computers with 384KB of main memory, single dual-sided double-density floppy disk drives with 360KB of storage per disk, 10MB hard disk, floppy disk backup, graphics cards, work stations, and printers (one on 80 cps dot-matrix printer and the second a 20 cps bidirectional daisy wheel letter-quality printer). The expanded seven-user system proposes five additional work stations each with 384 KB of main memory, dual floppy disk storage, graphic card, and printer. In addition, the seven user L.I.O. networking feature calls for a single network "hub" [with repeater (PC-PM071) and connect card (PC-PM072)], and a communications controller card (PC-PM070) in each micro, as well as communications software in each micro (PC-SS080). The LIO network allows connection among up to 24 work stations (8 per board with up to 3 boards), each located up to 2,000 feet apart.

Communications with the Natural Resources Commission's system (IBM 3081) in order to access their data base is possible via modem using 3780

communications at up to 9,600 baud. The cost in hardware (Remote Telecommunications Option card) and software is \$1,100.00

All specified programming is proposed except engineering software (which is available through Hydro Systems, Inc.). Wang is the supplier of the operating system (MS-DOS) and word processing software, including support. Lotus 1-2-3 is specified for spreadsheet, data base and graphics functions, and is supplied and supported by Lotus Development Corporation. The remaining software (General ledger, accounts payable, accounts receivable, payroll and budgeting/project accounting) is supplied and supported by Peachtree Software, Inc. of Atlanta, GA.

Hardware and software support are available. Hardware support is from Wang out of Omaha, NE, after the 90 day warranty. On site maintenance is recommended with service during regular business hours, a 4 hour response time, and a loaner available in the event of necessary repair. Lotus software is warranted for 90 days, and software is replaced at \$15.00 for up to one year. Peachtree software is warranted for 90 days and telephone support is available via toll-free number from Atlanta, GA for a fee. Operating system and word processing support are available from Wang for a fee, though the local Wang office will attempt assistance by telephone and disk reformatting prior to charging for services.

Two days of training on the system and for word processing is available by Wang at a cost of \$175.00 per person per day though the vendor recommends the N.R.D. attempt self tutorial before seeking training. On-site training by Peachtree is available at a rate of \$195.00 per person per day (plus instructor's travel expenses) for a minimum of four persons, or as \$1,000 per day (plus instructor's travel expenses).

Software proposed:

Financial Management: Series 8 by Peachtree

General Ledger

Accounts Payable

Accounts Receivable

Payroll

Budget/Project Accounting: Job Cost System by Peachtree

Word processing: PC Advanced Word Processing by Wang

Spreadsheet: Lotus 1-2-3 by Lotus

Hardware: Wang PC-003B (16 bit, MS/DOS Operating System)

First-Year -

384K Main Memoery per microcomputer (work station)

10MB disk Storage

2 work stations

2 printers (one dot matrix and one letter quality)

Two terminal LIO (Local Interconnect Option)

Second-/Third Years -

384K memory per added microcomputer (work station)

10MB disk storage

1 printer (dot matrix)

Five terminal LIO, with "hub" (hub and 3-terminal expansion)

Fourth-/Fifth-Years -

384K memory per added microcomputer (work station)

1 printer (letter quality)

Seven terminal LIO, with "hub" (2 terminal expansion)

WANG SYSTEM COST SUMMARY

Phases	Year	Hardware ¹	Hardware ² Maintenance	Software ³	Software ⁴ Maintenance	Training ⁵	Other ⁶	Total
INITIAL 2 terminals 2 printers 10MB Disk LIO	85	11,468	720	10,808	647.50	525	696	24,864.50
	86		816		830			
ENG EXPANSION 3 terminals 1 printer LIO 10MB Disk	87	15,608	900	632	830			
	88		900		830			
OFFICE EXPANSION 2 terminals 1 printer LIO	89	9,380	1,200		830		165	
TOTAL		36,456	4,536	11,440	3,967.50	525	861	57,785.50

¹Additional disk storage may be needed. Currently, phases 1 and 2 each have one hard disk specified. Also Lotus requires two floppy disk drives to operate.

²First year maintenance is for 9 month because of 90 day warranty.

³Cost in 1987 is for second Lotus 1-2-3 and word processing.

⁴Maintenance includes \$146.00 per package for Peachtree software and \$100.00 per year for engineering. Peachtree software includes a 90 day warranty, and Lotus software is replaceable at a cost of \$15.00.

⁵Includes only Wang 3 day training.

⁶Other includes delivery, installation and transport insurance.

ANALYSIS AND RECOMMENDATIONS

The analysis is based on a tabulation of the vendor's responses to the Request for Proposal (RFP). Tabulations follow the requirements of the RFP as closely as possible, particularly in comparing the first-year, two work station and five-year, seven work station configurations. Adhering to RFP requirements in the evaluation insures that the same information is required from each vendor and that the proposals are evaluated as comparably as possible. Nevertheless, the Natural Resources District may choose to scale down or alter the system requirements at the time of acquisition.

The recommendations made here are based on three overall considerations. The first consideration is that the costs of the proposed first-year systems fall within the budget limitation established by the Natural Resources District's Board. The second consideration is that the systems proposed can be expanded over five years to become either (1) a single multiuser, six work station system or (2) two separate multiuser, three work station systems. And, the third consideration is that the technical characteristics of the proposed systems are adequate to meet the functional requirements of the NRD, particularly the capabilities of system software.

None of the proposals prescribing total system solutions to the NRD requirements were within the first-year budget limits established by the Board. However, three of the total-system proposals were only moderately higher than the Board-approved limit. Those three are considered here.

The three more moderately priced systems proposed each have or may have limitations and/or inadequacies for NRD purposes. Several of those limitations can only be verified through demonstration of the systems. Each

of the system's limitations are considered here in alphabetical order of the proposals.

The system proposed by Database Systems Corporation is on an 8-bit Apple IIe network. The 8-bit character of the system is basically old technology, and Apple is releasing a 16-bit system in late 1984 or early 1985. The speed and power of the 8-bit system needs to be examined in demonstration, and the multi-user characteristic and software integration also need to be verified in demonstration.

The system proposed by Information Processing, Inc. is on 32/16 bit Fortune hardware. Of the three moderately-priced systems, this proposal involves the greatest cost, even with only two printers. (The other two proposals incorporate seven printers.) More importantly, one of the most basic software packages (Fund Accounting) for NRD automation is unprescribed and costs are only estimated. In addition, questions have been raised in the technical literature concerning the financial performance of the Fortune Company.

Finally, the 16-bit system proposed by Wang Laboratories, Inc. is a network of single-user machines. While multi-user capabilities have been announced, they are not currently available for demonstration. Further, the adequacy of the proposed Peachtree software for financial management is unclear, and must be demonstrated.

As for the engineering needs of the system, the optimal solution appears to be the acquisition of software proposed by Hydro Systems, Inc. That software would operate on either the Database or Wang systems, but not on the Information Processing system.

Given the considerations above, and the information provided by American Fundware (see Addenda), there are two options recommended here, in order of the consultants' preference.

1. The Natural Resources District should delay its search for a data processing system until the American Fundware system (and possibly the Wang multi-user system) is (are) available for demonstration. The continuation of its search, in that case, should be possible by January of 1985. At that time, demonstrations would be scheduled for the American Fundware, Database and Wang systems.

2. The Natural Resources District should schedule demonstrations at this time of the proposed Database and Wang systems in order to resolve unanswered questions and to evaluate those systems in operation. Further steps toward evaluation and acquisition would be determined following those demonstrations.

SUMMARY OF PROPOSALS
TO PAPIO NATJRAL RESOURCES DISTRICT

	Hardware	First Year Cost	Phase II Cost	Phase III Cost	Five Year Cost	Average Annual Cost	Recommendation
Big Sky Data Systems Billings, MT (Optical Systems Research, Inc. Corpus Christi, TX for Engineering)	Alpho-micro	83,230 (plus 18,000 engineering)	5,243	1,500	117,392.93	23,478.59	No further examination. (Cost)
DEMO A1 The Computer Works Bellevue, NE (proposes to custom write Engineering) <u>NOT</u> Hydro.	Data General <i>16 bit 7 Term max 512K 1 floppy 15MB hard</i>	40,723	4,620	7,280	61,667	10,333.40	No further examination. (First year cost and software limitations.)
DEMO 2 Database Systems Corp. Omaha, NE (no specific Engineering is specified) Apple DOS <i>Hydro avail</i>	Apple IIe (Omninet) <i>8 bit 7 Term Network 129K 2 disk 5 floppy 10MB hard</i>	26,095	16,090	5,980	56,665 (with engineering from Hydro)	11,333 (with engineering)	Select for further examination (though reservation with 8-bit system).
Hydro Systems, Inc. Woburn, MA	None	3,100 Engineering Software	---	---	3,500	700	Select for further examination. (Only in combination with other proposals.)
Information Processing, Inc. Omaha, NE (engineering through HDR; emulator) <u>NOT</u> Hydro	Fortune <i>32/16 bit multi 12 Term max (?) 512K 15 floppy 20 MB (+32)</i>	26,784 (plus HDR engineering)	13,470	2,990	61,977 plus HDR engineering	12,395.40 plus HDR engineering	No further examination. (Cost and software limitations.)
Norco Data Systems, Inc. Omaha, NE (engineering unspecified; source book provided)	Digital Micro PDP-11 <i>2 Term rec 512K 2 disk 5 floppy 91MB hard</i>	45,524 (with 4,000 est for engineering)	11,135	4,985	78,074	15,614.80	No further examination (Cost)
DEMO B1 Wang Laboratories, Inc. Lowell, MA (No specific engineering is specified) MS-DOS <i>Hydro Avail</i>	Wang PC with LIO (Local Interconnect Option) <i>16 bit 7 Term net 347KB 1 floppy 10MB hard</i>	24,864.50 (with engineering from Hydro)	16,240	9,380	57,785.50 plus engineering	11,557.10 plus engineering	Select for further examination, (realizing limits)

DEMO 3
16/24 bit
multi-user (3 user)
512 KB
1 floppy
20 MB hard (+32)

750,170

ADDENDA

One additional computer system was examined for possible NRD acquisition. At the request of the General Manager of the Papio NRD, information on the soon-to-be-released IBM AT microcomputer was solicited. The reason for this effort was the wide use of IBM hardware for engineering applications.

Information on hardware was solicited from the IBM Product Center in Omaha, NE, and information for a total system (hardware, software, training, etc.) was solicited from American Fundware, Inc., of Steamboat Springs, Colorado. Specifications are extremely tentative, software is only currently being translated, and delivery of such a system would not be possible until the first quarter of 1985, at the earliest.

The IBM AT will be the first IBM microcomputer which is a truly multi-tasking, multi-user system. It is built around the Intel 80286 microprocessor with 16/24 bit architecture and uses the Xenix operating system. The "enhanced" unit, recommended by American Fundware, is configured with 512KB main memory (expandable to 3MB), floppy disk drive (with 1.2MB capacity), 20MB hard disk storage (expandable to 40MB), two work stations, and single printer. Color monitors, and color and graphics printers are also available.

The IBM AT multiuser system is currently configured for a maximum of three work stations. The enhancement of the system to a 10 work station configuration is speculative at present. However, the IBM AT (as with other IBM micro systems) can be tied into an IBM PC Network to enable several three-work station systems to communicate.

American Fundware (AF) has proposed a full range of office management software. Word processing, spreadsheet and data base management software is

not specified, but is available in single-user and multi-user versions. Engineering software is not specified, but would be available from Hydro Systems. AF has, this month, signed an agreement with Intel Corporation and Microsoft Corporation to test and implement its software on the IBM AT. AF does have programming available to run on the IBM PC. However, the Papio NRD must realize that the software rewrite for the IBM AT will not be completed until the end of 1984. In addition, the first user of that software is bound to encounter "bugs" in the programming that must be resolved during setup and initial useage

Engineering software proposed by HydroSystems will operate on the IBM AT.

Due to the pre-release status of the system, it is impossible to compute the long-term multi-user system(s) costs.

Price Summary of Initial (first-year) System - Estimate:

Hardware	\$10,219.00
Hardware Maintenance (estimated at 10%/yr)	5,109.50 (5 years)
Office Software*	15,560.00
Office Software Maintenance	7,780.00 (5 years)
Engineering Software	3,000.00
Engineering Maintenance	500.00 (5 years)
Training and Installation	1,150.00
First-year cost	33,010.90
Five-year cost	43,318.50
Average annual cost	8,663.70

*Word processing spreadsheet and data base manager not included. Will be available as multiuser or single user packages.

Recommendation- Should the Papio NRD wish to pursue possible acquisition of an IBM AT system, it is only prudent that it put its search on hold until early 1985 in order to adequately evaluate the IBM system.