



PN-ABL-069
International, Inc.

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usn 76757

**FEASIBILITY OF FRESHWATER
PRAWN PRODUCTION
IN BELIZE**

Presented to
USAID/Belize
and the
Government of Belize
Ministry of Economic Development

31 January 1990

Prepared by
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under Contract No.
505-0012-C-00-9308-00

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ACKNOWLEDGMENTS

This study could not have been completed without the cooperation and assistance of many individuals in Belize, Puerto Rico, and the United States. Key among these, Mr. Art Villanueva, USAID Project Officer, provided important background information on the development of shrimp mariculture in Belize. Mrs. Yvonne Hyde, Permanent Secretary of the Ministry of Economic Development, and Mr. Rodney H. Neal, Permanent Secretary of the Ministry of Agriculture, actively guided the development of this study.

The comments and information obtained in meetings with Mr. Vincent Gillett, Fisheries Administrator of the Aquaculture Unit of the Ministry of Fisheries, were invaluable. RDA would also like to thank Mr. Robert Usher, Executive Secretary of the Northern Fishermen Co-Operative Society, Mr. Severo Pinto, Executive Secretary of the Belize Fishermen Cooperative and Mr. Jack Longsworth, Director of Caribbean Shipping Agencies, for their informative discussions of the seafood processing and shipping capabilities in Belize. Mr. Michael Wood, General Manager of Belize Mills, and Dr. Kenneth Niels of the Belize Marketing board are especially thanked for their informative updates provided to RDA staff on the availability high quality feed stuffs and the feed manufacture capabilities in Belize.

Informative discussions with owners, managers and other personnel of the prawn, marine shrimp and tropical fish farms presently operating in Belize were essential to the development of this study and recommendations for future development of prawn culture in Belize. These individuals include: Mr. David B. Dick, Mr. Charlie McIntosh, Mr. Victor Quan, Dr. John Snell, Mr. and Mrs. Russell Allen, Ms. Linda Cardelli, Mr. Bill Thorton, Mr. James Young, Ms. Veronica Wang, Mr. Thomas Grimshaw and Mr. James Hyde. Many of these individuals provided confidential financial and operating data, and deserve special thanks.

In Puerto Rico, Mr. John Glude, President of "Langostinos del Caribe", Sabana Grande Prawn Farms, and Mr. Dennis DeLong, Farm Manager, provided invaluable assistance and insight in a variety of areas ranging from hatchery technology to product packaging and marketing. Their assistance and support are gratefully acknowledged.



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Top: Marketable size, adult male prawn held in processing holding tank.
Bottom: Freshly chill-killed prawn being weighed before processing and packaging. (Photographs taken at the Langostinos del Caribe Prawn Farm, Sabana Grande, Puerto Rico)



Top: Technicians cull harvesting adult prawn from growout ponds.
Bottom: Rectangular, 0.75-acre prawn growout ponds seperated by wide berms.
(Photographs taken at the Langostinos del Caribe Prawn Farm - Sabana Grande, Puerto Rico)



1.0 EXECUTIVE SUMMARY

This study conducted by RDA International, Inc., for the Government of Belize under USAID contract, examines the feasibility of commercial export-oriented production and marketing of the freshwater prawn Macrobrachium rosenbergii in Belize, reviews physical requirements including soils types and site locations, discusses the technical details of project operation, and provides detailed cost and economic analyses for several alternative operations.

The results of this study clearly show that a commercial freshwater prawn (Macrobrachium rosenbergii) operation in Belize can be an economically viable and profitable venture. Conditions of temperature, climate, and soils in Belize are suitable for such an operation. The required production technology is available and can be transferred to Belize. Quality seed stock is available in commercial quantities from Caribbean sources, and there is an established market in the United States for the product.

The principal constraints to such an investment include the availability of power, an adequate road system, and reasonably priced air cargo. The analysis presented here has assumed that reliable public power will be unavailable at the project site, and the costs of a diesel electric system have been included. The public road system in Belize is such that many areas, otherwise suitable for an operation of this type, are not economically viable due to the requirement for year-round access to the site, and reasonable road transit time to an air shipment point. Air shipment of fresh and fresh frozen product is required, and air cargo costs can be a major limiting factor. Individual shipments in excess of 1100 pounds are required if reasonable cargo shipment costs are to be obtained. This means the production operation must be of such size as to insure regular shipments of this volume.

The economic analysis has shown that a commercial operation based on 25 acres of pond surface (50 acre total farm size) could be economically viable within four years at discount rates as high as 20 percent, but may not be a viable proposition under reasonable "worst case" conditions. A 75 acre (150 acre total size) farm, however, is profitable under even those conditions at four years and 14 percent, or five years and 20 percent. A 125 acre farm is similarly profitable at four years and 16 percent.

The minimum size for a commercial prawn operation in Belize should then be on the order of 75 acres of pond surface area, with a total farm area of 150 acres. Such an operation will require a peak investment of approximately \$1.2 million. Cash flow should be positive within 30 to 36 months with net profits in the fifth year of operation between \$750,000 and \$1,400,000. These conclusions and the underlying analyses presume that Government tax policy is such as to encourage a commercial undertaking of this nature.

It should also be noted that once an operation of the size recommended here is established in Belize, then smaller farm units may well be economically viable. Such smaller farms would not need to invest in a hatchery, since the larger unit will have the capacity to produce seed stock in excess of its own production needs in the course of normal operations. The smaller farms could also take advantage of the bulk air cargo rates by timing product shipment to coincide with those from the larger farm, or by selling their product directly



to the larger farm, thereby reducing both marketing and shipping costs. The formation of a prawn producers cooperative operation is also a possibility.

Sensitivity analysis of economic variables shows clearly that while pond and related construction costs are the largest cost elements and have the highest degree of uncertainty, production rates, and farm management efficiency have the largest impact on profits and economic viability. This is particularly significant in that these rates are internally determined. The financial success of a freshwater prawn production operation in Belize is then literally in the hands of the producer.



2.0 INTRODUCTION AND OBJECTIVES

This project is one of a series recently completed by RDA International, Inc. (RDA) for the Government of Belize (GOB), under contract to the United States Agency for International Development (USAID). The project was directed by Don Rivard, Project Manager and RDA aquaculture specialist. Ken Craib was responsible for the economic analysis. Paul Maugle assisted with data collection in Belize.

This study focused on the feasibility of commercial export-oriented production and marketing of the freshwater prawn, Macrobrachium rosenbergii, in Belize. The objective was to provide information and analysis that could assist potential investors in their evaluation of risk and investment decisions.

The scope of work included the following tasks:

- 1) A survey and analysis of the soil, water and transportation resources to define potential prawn production sites in Belize.
- 2) Identification of sources of prawn seed and brood stock.
- 3) An estimation of required investment and fixed and operating costs at various production levels.
- 4) An analysis of the sensitivity of profitable production to price and production yield changes.
- 5) An estimation of the processing and shipping costs to U.S. markets.
- 6) Identification of potential buyers of prawn, their annual requirements, and the prices paid for prawn relative to penaeid shrimp.

From September to December 1989, RDA personnel traveled to all of the penaeid shrimp, freshwater prawn and tropical fish farms in Belize. Informative discussions were held with the owners and/or managers of these operations. Additional information was obtained during meetings with officials of the Ministry of Economic Development, the Ministry of Agriculture, the Department of Fisheries, the Belize Export Investment and Promotion Unit, several fishery cooperatives, seafood packing plants and the Belize Feed mill.



3.0 THE MARKET FOR FRESHWATER PRAWN

Commercial aquaculture enterprises need to be market driven. Therefore, the primary prerequisite when considering such an enterprise is identifying and defining the scale, nature and location of potential markets for the enterprise's proposed product(s). Once this is done, a producer can then determine the design and size of production facilities and develop an operational strategy for the enterprise geared toward meeting market demand.

Recent trends in U.S. seafood and freshwater fish consumption should encourage potential Belizean producers to target the U.S. market. For example:

- The U.S. imports over \$5 billion worth of seafood and freshwater fish products annually, while exporting approximately \$1.5 billion worth of these products.
- Per capita seafood consumption in the U.S. has consistently increased during the past decade. Since 1984, per capita consumption has increased from 13.7 pounds to 15 pounds per year.
- The U.S. currently consumes 24 percent of the total world supply of shrimp of all types and this percentage is expected to increase.
- Total U.S. imports of fresh or frozen whole shrimp of all types have grown by 123 percent between 1980 and 1987, at an average rate of more than 17 percent annually.

There is great potential for Belize to enter the U.S. prawn market, should the country develop a prawn culture industry. Prawn is in short supply in the U.S. market, and prawn products can command an attractive price if properly priced, packaged, distributed and presented to consumers. While there are no accurate figures available on the size of the U.S. prawn market, it has been estimated at six to ten million pounds annually over the past few years. Transport time and costs from Belize to the U.S. should be reasonably competitive, as the country is much closer to the U.S. than most other prawn producing countries.

Currently, there are only a few commercial aquaculture operations producing prawn in the U.S. and U.S. territories. These operations are located in Southern California, Hawaii, Puerto Rico and Guam. Table 1 lists the amount of production at these operations, and total world production, for recent years (Note: total world production figures were not available for 1986-1989). It can be noted that while total world production of prawn has been increasing during the past decade, U.S. production can best be described as inconsistent.

In the past three years, U.S. sources have only been able to provide between 400,000 to 500,000 pounds annually -- approximately 4-5% of demand. U.S. prawn consumption has been largely satisfied by imports from Thailand, Bangladesh, Burma, Brazil, China, Indonesia, French Guinea and the Philippines. It is unlikely that U.S. production of prawn will increase significantly in the future, as there are very few areas in the continental United States which have the proper climatic conditions to produce prawn economically. Thus, the U.S. prawn market must continue to rely mainly on imports to meet consumer demand.



Table 1.

Estimated Freshwater Prawn Production from 1980 to 1989
(in thousands of pounds)

<u>Year</u>	<u>Puerto Rico</u>	<u>Hawaii, Guam and California</u>	<u>Total World</u>
1980	-	300	75,837
1981	-	278	68,355
1982	-	401	83,584
1983	-	275	88,857
1984	-	317	99,683
1985	25	267	110,066
1986	110	178	-
1987	240	200	-
1988	300	125	-
1989	360	155	-

Sources: U.S. National Marine Fisheries Service, 1980-1987
U.S. Department of Agriculture, 1988

In the continental United States, the market segmentation for prawn at present closely parallels the distribution of Southeast Asians in large metropolitan areas. While prawn imports represent approximately two percent of total shrimp imports, the percentage is significantly higher in areas serving Southeast Asian communities. For example, a major California seafood importer's prawn imports are four to five percent of total shrimp imports. His customers are mainly seafood markets which cater to the Southeast Asian communities in California. This next largest market is the "white tablecloth" and Oriental restaurants serving the general community. A New York wholesaler has similar markets. In Florida, primary markets for prawn are the better "white tablecloth" seafood restaurants and Oriental seafood stores. Most of the prawn produced in Hawaii are sold at the retail level and consumed at home. In Puerto Rico, eighty percent of Langostinos del Caribe's prawn production is exported to the U.S. and twenty percent is sold directly to "farm gate" customers who come to the farm.



Prawn have yet to be optimally marketed in the U.S. to reach a larger and more diverse group of consumer, mainly because seafood brokers and wholesalers have not differentiated prawn from marine shrimp. Prawn differ in many ways from penaeid shrimp, including:

- Prawn and marine shrimp grow in different environments (freshwater vs. salt water) and have different anatomical characteristics
- Prawn have a milder and more delicate flavor
- Prawn require different methods of processing, preservation, preparation and cooking
- Prawn shipped fresh, on-ice have a shorter freshness period than shrimp
- Prawn have a greater head-to-body weight ratio (50-55%) vs shrimp (40-45%) and are available in larger sizes -- therefore prawn cost relatively less.

Because of these differences, prawn and shrimp serve different markets. Yet, in official trade and import/export considerations, they are not adequately differentiated.

Despite a healthy demand for high quality products in the U.S., the seafood brokers contacted during this study stated they were presently unwilling to make long-term commitments to purchase prawn due to the inconsistency of delivery by present producers. However, many of these same brokers believe that, if the supply conditions were improved and if a reasonable consumer education program were instituted to teach consumers the difference between prawn and shrimp products, the prawn market could be greatly expanded. (Note: Such a consumer program has met with success for the Langostinos del Caribe prawn culture operation of Puerto Rico.)

Recent U.S. market prices for prawn from Puerto Rico and Asia are shown in Table 2. It should be noted that the Puerto Rican product is heads-on, fresh on ice, while the Asian product is headless and block frozen. In general, the lower price of the Puerto Rican product makes it more desirable to the wholesaler. Table 3 lists recent U.S. market prices for penaeid shrimp from Ecuador and Panama. While prices for prawn and penaeid shrimp can be compared in Tables 2 and 3, the reader should keep in mind that these prices cannot be correlated on a one-to-one basis.



Table 2.
Freshwater Prawn Prices
U.S. Market, November 1989
(USD/lb)

From Puerto Rico
(Heads-On, Fresh on Ice)

<u>Counts</u>	<u>f.o.b.</u>	<u>c.i.f.</u>
	<u>Sabana Grande</u>	<u>US West Coast</u>
5/7	\$8.45	\$9.30
8/10	7.45	8.30
11/15	6.45	7.30
16/20	5.25	6.10
>20	4.00	5.50

From Thailand, Burma, and Bangladesh
(Headless, Block Frozen)

<u>Counts</u>	<u>c.i.f. Los Angeles</u>	
	<u>Broker/Importer</u>	<u>Wholesaler</u>
6/8 *	-	\$11.00
9/12	\$7.75	9.90
13/15	6.40-6.75	7.50
16/20	5.40-5.50	6.00
21/25	4.35-4.90	5.05
26/30	3.55-3.90	4.05
31/40	3.15	3.80
41/50	2.45	3.25
51/60	2.30	2.65
>60*	2.00	-

* Less than 12 count and greater than 60 count, limited quantities available

Sources: Ocean Frozen Inc., 1989; Red Chambers, Inc., 1989



Table 3.

Penaeid Shrimp Prices
U.S. Market, November 1989
(USD/lb)

From selected Latin American countries
(Headless, Block Frozen.)

<u>Counts</u>	<u>f.o.b. Ecuador</u>	<u>f.o.b. Panama</u>
un/8	\$9.10	\$8.80
un/10	8.86	8.40
8/12	7.93	7.55
13/15	7.33	6.45
16/20	5.53	4.70
21/25	4.39	4.00
26/30	4.25	-
31/35	4.21	-
36/40	3.51	-
41/50	3.35	-
51/60	2.80	-
61/70	2.67	-

Source: INFOFISH Trade News, No: 22/89. Issued: 1 December 1989



4.0 POTENTIAL PRAWN PRODUCTION SITES

There is a relatively large area of land in Belize which could potentially be utilized for prawn production sites. This report provides general guidelines for the selection of these sites. It does not attempt to designate and list specific locations. Each potential site must be thoroughly investigated and examined to determine whether the appropriate soil, water, and transportation resources and conditions exist (or are readily available) for the technical and economically viable production of prawn. Certain political and social issues (i.e. land tenure and ownership) must also be considered and resolved during the site selection process.

Following is a general discussion on the soil, water, and transportation resources of Belize related to prawn production operations. A sample "Site Selection Data Sheet" is provided in Appendix A. This or similar data sheets can be employed to standardize site evaluations.

4.1 Soil Resources

The optimum prawn production sites in Belize would be located in the siliceous soils of the Lowland Pine Ridge, free of limestone outcroppings --- an area which encompasses 4,010 square kilometers. This area was identified in the "Belize Country Environmental Profile" (Hartshorn, et. al. 1984) as being suited for aquaculture and RDA concurs with this finding. The area is designated as soil type "6a" in Figure 1.

Competition for the use of the land in this area should be low. The majority of soils in the relatively flat Lowland Pine Ridge landform have low or very low levels of nutrients. There is very little permanently established agriculture in this area because of this naturally-occurring low soil fertility. Much of the area is covered with natural pine forest and/or grassland savanna vegetation, with some of the area used as pasture. In the past, some expensive attempts have been made to use parts of this area for vegetable production and fattening of cattle on improved pastures, but none of these attempts have lasted more than a few years.

4.2 Water Resources

Water, obviously, is a very important input for any "aqua"culture operation. It is absolutely essential for a prawn culture operation to have a reliable source of freshwater. The quality and quantity of available water determines the technical limit on the pond area and on the potential productivity of the farm. Optimum water criteria for prawn culture is listed below.

Volume of water:	Minimum of 35 gal/min/acre of water surface area
pH range:	6.5 - 8.0
Total Hardness:	Less than 150 ppm (preferably 100 ppm CaCO ₂) and greater than 40 ppm
Temperature range:	65-94 Degrees F (optimum 85-90 Degrees F)
Dissolved Oxygen:	Greater than 5 ppm

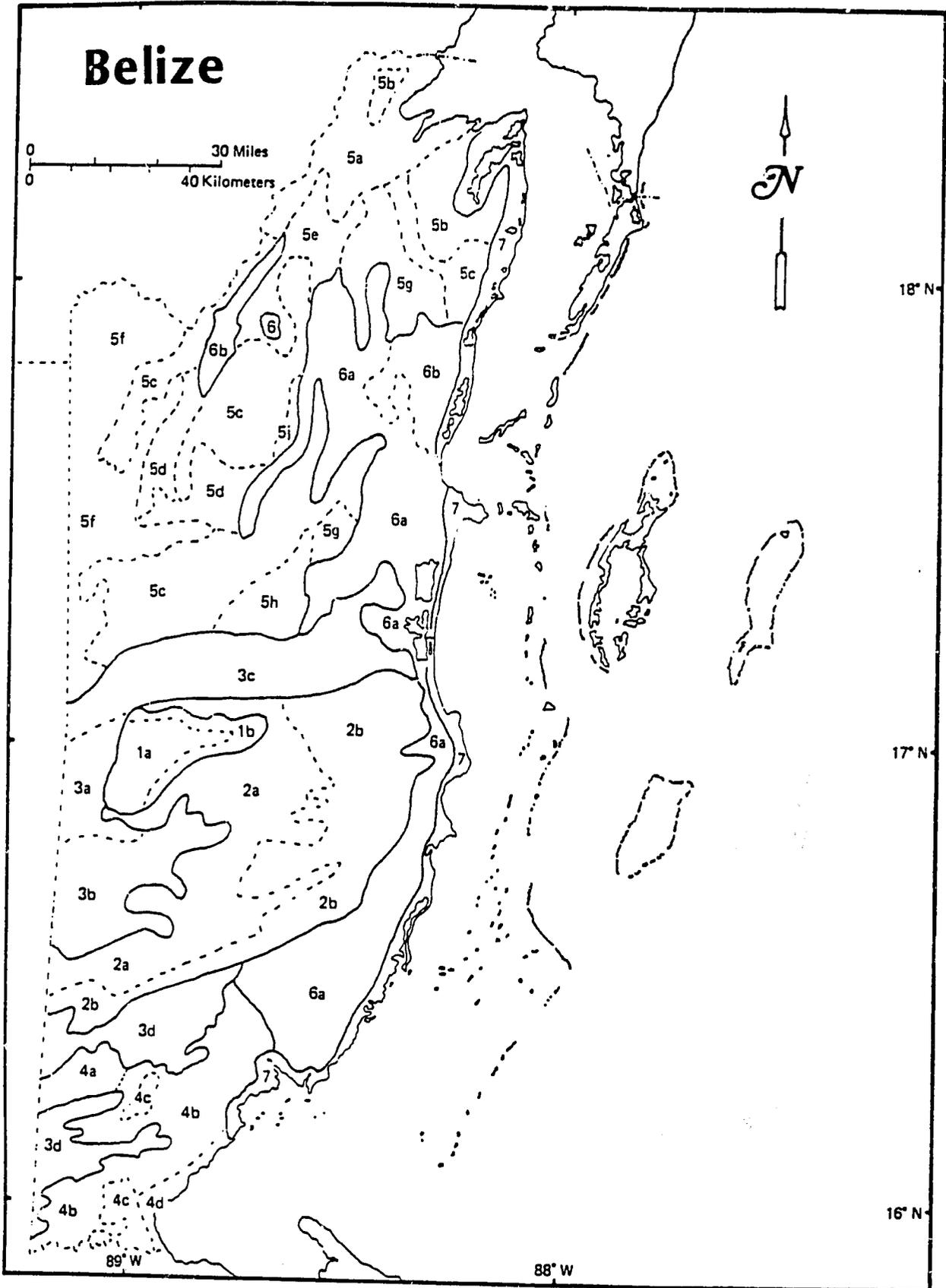


Figure 1. Principal landforms of Belize based on major soil features.
Source: Hartshorn, et.al. 1984.



A reliable supply of good quality water must be available throughout the year in order to 1) replace water loss due to evaporation and seepage, 2) provide enough extra water for certain management operations (i.e. draining and refilling of ponds) and 3) to replenish the micro nutrients and minerals utilized by prawn, especially during molting. In assessing potential sites, decisions to build at a particular site must be based on the prevailing water conditions during the hottest and driest time(s) of the year, when evaporation is highest, oxygen depletion in ponds is most likely to occur, and the water supply is often at its lowest level.

The best water sources for use in prawn culture are wells. However, surface sources have been utilized successfully for growout ponds. Generally, a well will provide a more dependable flow of water throughout the year and the water is relatively free of diseases, parasites, predators, trash fish, pesticides, silt and other contaminants. Well water as a source of freshwater for use in the hatchery is almost essential, as larvae are much more sensitive than adult prawn to the contaminants listed above.

Well water may contain potentially high carbon dioxide and nitrogen levels and low oxygen levels. A venturi system (or similar systems which spray the pumped well water onto a flat surface at discharge) will alleviate most of these dissolved gas problems. Before any final decision is made on a potential prawn culture site, a test well should be drilled, and water pumped from it for two days. Water samples should then be taken and the water tested for proper quality standards and the presence of contaminants.

The freshwater prawn develops through a complex series of larval stages, some of which require salt water. This can be transported from sea shore to hatchery by tank truck. After chlorination/dechlorination treatment, the salt water is mixed with fresh water at the hatchery to provide the proper salinities for each larval stage. This requirement for regular transshipment of reasonable quantities of salt water imposes an additional geographical constraint on site selection, and also on all-weather road accessibility.

Other hydrological characteristics of potential sites also need to be considered. For example, two of the major characteristics of the gently-sloped, Lowland Pine Ridge landform are the slow percolation and runoff rates of rainwater. This leads to flooding whenever there is a prolonged period of heavy rainfall. Any aquaculture operation that is located in this landform will need to take all of these hydrological characteristics into account during site selection and design and construction of production facilities.

4.3 Transportation Resources

Overall, the road system in Belize is in poor condition. There are only two major paved highways in the country, the Western and Northern Highways. The country's unpaved roads are often rough to drive even in the best of weather conditions. During the rainy season, there are times when these roads become impassable for various lengths of time.



The fastest and most reliable method of transporting prawn products to the U.S. would be via air freight. There are a number of regularly scheduled flights from Belize which could transport prawn products directly to Miami, Houston, and New Orleans.

Prawn operations in Belize should be located within relatively easy access to shipping points and subsequent markets. Ideally, the operations should be within one hour travel time to a major seaport or airport, with similar ease of access to coastal areas for salt water collection and transport to the hatchery.



5.0 PROJECT DESIGN AND OPERATION

A prawn culture operation in Belize should be a fully integrated operation designed to support all the various life stages of Macrobrachium rosenbergii from egg to market size. Components of an integrated project include a hatchery, acclimation facilities, nursery and growout ponds, a feed storage area (building or room), post harvest processing and freezing facilities, an office, a maintenance and repair shop and on-site housing for management and key personnel. A generalized schematic of an integrated prawn farm is presented in Figure 2.

A typical prawn farm will have a two-to-one ratio of total land area or farm size to pond "water surface" area. An operation with 25 acres (10 hectares) of ponds would then require a total farm area of approximately 50 acres. For purposes of comparison, this study considers three alternative size farms, referred to by their total pond surface area as 25, 75, and 125 acre operations.

5.1 Hatchery

Egg bearing female prawn are taken from the growout ponds, brought into the hatchery, and induced to release their eggs. The eggs are placed in a specialized facility where optimum water conditions and nutritional requirements are maintained to maximize the survival and growth of prawn larvae through several stages of development, once the eggs hatch. The skill and experience of the hatchery personnel to maintain optimum water conditions in the larval rearing tanks greatly determines whether healthy and vigorous, or diseased and/or stressed, post larvae (PL's) seed stock are available for the growout stage.

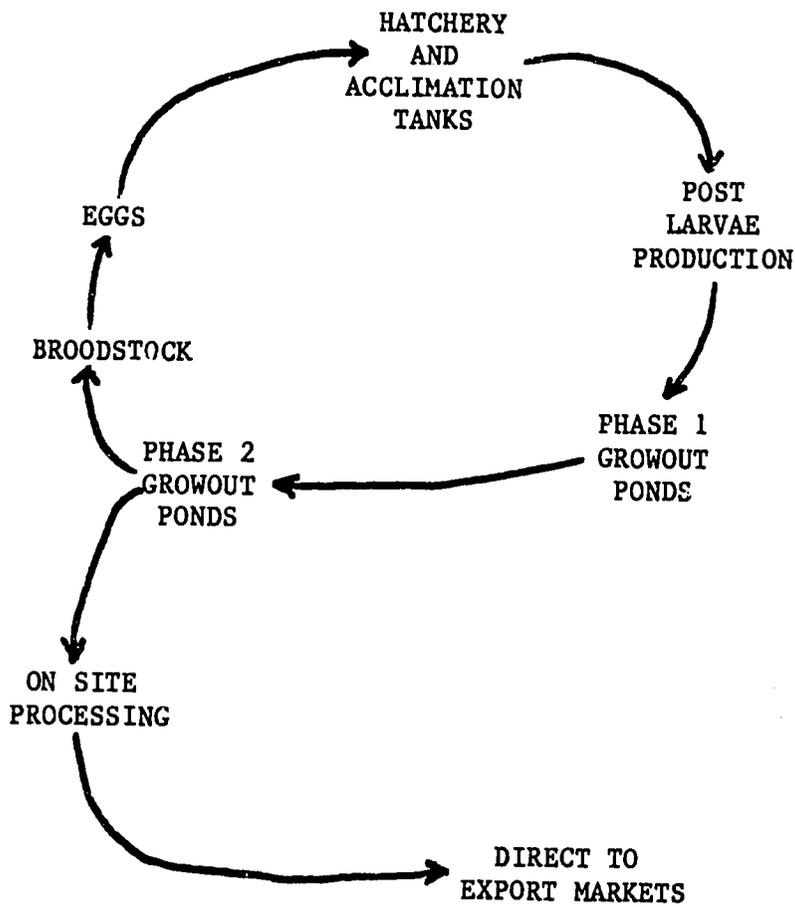
The hatchery PL production capacity is based on production goals and is directly related to the total surface area of growout ponds. Table 4 lists the number of required PL rearing tanks, the hatchery PL production capacities, and the annual PL production requirements for the 25-, 75-, and 125-acre prawn farms.

Production of PL's is conservatively estimated to be 400,000 PL's per 45 days per rearing tank (10-12 ton volume capacity). Actual production may be higher, with a resultant increase in the overall consumption of expendables, i.e. diesel, electric power, Artemia, and feed. It should be noted that all three farms will produce more PL's than required for their own production goals. This allows for a margin of error. The excess PL's could potentially be sold to other producers and would, in that case, represent another source of revenue. This additional income is not considered in the project economic analysis due to the uncertainty of a local Belize market for the excess PL's and competition from well-established companies in the external market.



Figure 2.

Prawn Project Schematic



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Table 4.

Number of Required PL Rearing Tanks, Hatchery PL Production Capacity,
and Annual PL Production Requirements for
25-, 75-, and 125-acre Prawn Farms

	<u>25 acres</u>	<u>Farm size</u> <u>75 acres</u>	<u>125 acres</u>
Number of rearing tanks (10 to 12 ton capacity)	3	8	14
Hatchery PL production capacity (millions/yr)	7.2	19.2	33.6
PL production requirement (millions/yr)	6.0	18.0	30.0
PL's available for off-farm sale (millions/yr)	1.2	1.2	3.6
Potential revenue from PL sales (@ US\$0.02/PL)	\$24,000	\$24,000	\$72,000

5.2 Growout and Harvesting

For the first step of the growout stage, PL's from the hatchery are stocked into 0.25-acre nursery ponds, at densities of 250,000 to 300,000 per acre, where they are grown for sixty days. After thirty days, the faster growing prawn, now considered juveniles, are "culled" (selectively harvested). Each nursery pond is cull harvested two to three times during the second month. The slower growing prawn are batch harvested after sixty days.

The juvenile prawn, weighing usually 0.5-1.5g, are then stocked into Phase I, 0.75-acre growout ponds at a density of 40,000 prawn per acre. The prawn are grown in the Phase I ponds for three months. Cull harvesting is then begun again to remove the larger prawn. The largest prawn (35 grams or more), may go directly to market. The rest are restocked into Phase II ponds at a stocking density of 20,000 prawn per acre. Phase II ponds are then harvested as needed. Producers in Puerto Rico report that some Phase II ponds, when properly managed, have produced market size prawn for up to two years before complete draining and cleaning of the ponds was necessary.

Prawn in the Phase I and II ponds are normally fed at a rate of 25 to 30 pounds/acre/day. At this rate, a 3 to 1 feed conversion ratio is expected.



The Phase II ponds are stocked six times during the year to produce a continuous harvest (after the first three months). Data from the Puerto Rico producers indicate that 225 to 275 pounds of live prawn/acre/month can be consistently harvested using the stocking, growout, and harvesting methods described above.

5.3 Processing and Shipping

Marketing high quality products depends on the quality of the post harvest handling and processing effort the farm undertakes. This study incorporates on-site processing as an integral part of the operation because proper handling is necessary for entry into high value markets. This on-site facility utilizes ice slurries to chill-kill freshly caught prawn. The prawn are then sorted by size, leaving the heads on, and removing any soft, recently molted, and damaged animals. Prawn are then packed in two-pound boxes. The boxes of product are turned over on to the top and filled with water containing Potassium Sorbate to extend shelf life. The product is then frozen at -40 oF and stored at -10oF in a walk-in freezer or a 20' refrigerated container.

When a minimum quantity is accumulated, a commodity air freight rate for the product can be obtained. While there are several airlines offering various services from Belize City, only two provide commodity specific air freight rates. TACA airlines offers the most advantageous rates. In discussions with TACA personnel, a specific commodity rate of US\$0.22/lb for quantities greater than 1,100 pounds was obtained for destinations of Miami, Houston and New Orleans. The greatly increased costs for air freight for quantities less than 1,100 pounds excludes entry of smaller quantities to high value markets in the U.S. Standard air freight rates are listed in Table 5.

Table 5.

Standard Air Freight Rates from Belize International Airport
TACA Airlines, November 1989
(USD/lb)

<u>Destination</u>	<u>Minimum charge</u>	<u>Shipping Weight</u>				
		<u><99 lbs</u>	<u>+99 lbs</u>	<u>+220 lbs</u>	<u>+660 lbs</u>	<u>+1100 lbs</u>
Houston, TX	40.00	1.95	1.95	1.43	1.43	1.30
Los Angeles	40.00	2.72	2.72	1.89	1.89	1.86
Miami, FL	40.00	1.44	1.44	1.04	1.04	0.88
New Orleans	40.00	1.44	1.44	1.04	1.04	0.88
San Francisco	40.00	4.46	4.46	3.24	3.00	2.67



The high standard air transport cost is a major constraint for entry into the higher value U.S. West Coast markets. The specific commodity rate of US\$0.22/lb quoted by TACA was utilized in the economic analysis (See Section 6.0).

5.4 Personnel

The type and number of personnel is based on the production capacity of the operation. Table 6 lists the type and number of personnel required for the 25-, 75-, and 125-acre prawn farms.

Table 6.

Required Personnel for 25-, 75-, and 125-acre Prawn Farms

	<u>25 Acres</u>	<u>Farm size 75 Acres</u>	<u>125 Acres</u>
Administration			
Farm Manager	1	1	1
Accountant	1	1	1
Secretary	1	1	1
Purchasing and Marketing Agent	1	1	1
Administrative Assistant	0	0	1
Hatchery			
Hatchery Manager	1	1	1
Hatchery Supervisor	0	1	1
Hatchery Technician	1	2	3
Production			
Pond Production/Feed Supervisor	1	1	1
Maintenance Supervisor	1	1	1
Water Quality Specialist	0	1	1
Harvest/Processing Supervisor	0	1	1
Laborers (fulltime)	6	10	14
Laborers (parttime)	6	15	15



6.0 ECONOMIC ANALYSIS

In order to properly examine economies of scale, this analysis considers three alternative farm unit "sizes" of 25, 75, and 125 acres (10, 30, and 50 hectares) of pond surface area in prawn production. Additional land area is obviously required for berms, roadways, hatchery, operations, maintenance and similar facilities. In general, total farm area will typically be twice the total pond surface area in production. Land areas of 50, 150, and 250 acres (20, 60, and 100 hectares) are then required for the three production alternatives considered here.

Each alternative is viewed at three, four, and five years of operation. As a general rule, equipment and machinery have shorter operating lives under tropical conditions in developing countries, and should normally be depreciated over shorter periods of time than might be appropriate in temperate climates. This is partially offset by including a substantial maintenance allowance in the operating budget.

Discount rates of 12, 14, 16, 18, and 20 percent are used in Net Present Value calculations, for each of the three farm sizes, at three, four, and five years. These rates bracket current rates in Belize and represent reasonable upper and lower bounds for a five-year time horizon.

The basic marketing strategy in this study presumes that 100% of the product is sold for export. In actual practice, this will not be the case. Experience with similar operations has shown that substantial "farm gate" sales often develop, in addition to other in-country sales. These sales will not bear export costs, but may also be at lower unit prices, and may often involve smaller animal sizes that might not be suitable for export. In general, the assumption of export-only sales with associated slightly higher production costs is a conservative approach for purposes of economic analysis.

The following sections summarize and examine the principal assumptions supporting each of the major line items in the economic analysis spreadsheets accompanying this report (See Appendix D). Belize is somewhat unusual in that sections of the economy function on a mixed-unit system (i.e. pounds and kilograms, acres and hectares). The analysis presented here is based on the British system of pounds and acres. All costs are expressed in U.S. dollars. Timelines and dates are illustrative.

6.1 Variables and Assumptions

Pounds Exported assumes that pond construction requires four to six months with the first ponds stocked in the sixth month (shown here on 1 June) and partially harvested three and a half months later (here 15 September). By the twelfth month, six months after initial stocking, total production exclusive of culls is projected at 200 lbs/acre/month. For the following six month period (January - June) a production rate of 225 lbs/acre/month is estimated, increasing to 250 lbs/acre/month July - December, stabilizing at 275 lbs/acre/month by the following January, eighteen months after production begins.

Average Sales Price is estimated at \$6.50 per pound, F.O.B. Belize, for the first (current) calendar year, then increased ten percent per year.



Land Resale Value is included to account for the recoverable investment in land in the Net Present Value calculation. Land is presumed to increase in value at five percent per year. Pond construction and related land modification costs are expensed or depreciated over the project lifetime and are not considered to increase the residual value of the land. To the extent they do so, this estimate is conservative.

Hatchery Building and Operating costs include the costs of tanks, filters, plumbing, electrical, and facilities construction, spread evenly over the first six months. These costs are shown as expensed instead of depreciated to permit a more accurate picture of cash flow and financing requirements. This then requires that the project life be sufficiently long to allow for an equivalently appropriate depreciation period of from three to five years, or more in some cases. The longer terms will require reasonable expenditures on maintenance, which is included in the monthly operating cost. Monthly operating costs are increased 20% in 1991 to reflect increased salary costs for trained personnel, and a further 15% in 1992, with 10% increases in subsequent years.

Nursery Pond Operating costs begin when the ponds are stocked, increasing gradually to an average of \$0.50 per pound of production.

Grow-Out Pond Operating costs are treated in the same manner as Nursery Ponds, increasing to a unit cost of \$0.80 per pound of production.

Land Cost represents cost of initial land acquisition in 50, 150, and 250 acre units respectively. Purchase price is based on \$225 per acre, which includes direct purchase, stamp tax, title transfer, legal fees and similar related costs. For cash flow purposes, the purchase price is expensed in the first month with cost recovery in the last month of the three, four, and five-year cost analyses.

It should be noted that this cost is a relatively small part of the total project cost, and can vary considerably without materially affecting total project cost or economic viability. A farm owner or project operator might then be well advised to pay slightly more per acre for more level to gently sloping sites where significant savings might be possible in pond construction, drainage, and road building.

Construction, Maintenance, and Well costs include land clearing, internal roads and drains, pond construction, water exchange gates (two per pond), plumbing, underground feeder piping, a fresh water well, and basic farm vehicles. Costs are expensed evenly over the first six months, estimated as representing total construction time. Monthly maintenance costs of \$3,300, \$8,900 and \$11,400 are shown for each size operation starting in the seventh month. This figure is kept constant through succeeding years, reflecting a decrease in maintenance of established ponds and grass-covered slopes and an increase in vehicular maintenance.

Diesel, Electric and Pumping costs are presumed zero for the first five months, followed by a flat rate for three months as ponds come into production. This flat rate is equal to the cost incurred in the first month of full production, which in turn is linked to the value of sales at five percent of sales, and thus increases ten percent per year.



Harvesting costs are shown separately as this is often done by a specialized crew, and can interfere with otherwise normal day-to-day operations. These cost are directly related to total production and are estimated at a rate of \$0.075 per pound of production.

Communication costs include the costs of communicating with suppliers, brokers and purchasers as well as essential advertising costs. They are estimated at a flat rate for the first eight months, then tied to total sales at a rate of ten percent of sales.

Farm Office costs represent costs of initial office equipment and continuing supplies. These costs are increased at ten percent per year.

Packing and Storage costs are based on current rates at packing facilities in Belize and in neighboring countries. These rates vary, but have reached \$0.25 per pound. This figure is used as a conservative estimate in these calculations.

Maintenance costs include tools, spares, replacement parts and the operational costs of vehicle, carpentry and equipment repair. These cost are based on observed costs on similar farm operations in Belize and neighboring countries.

Security costs are estimated at \$500, \$1,000, and \$1,500 per month for the 25, 75, and 125 acre operations respectively, increasing annually at ten percent per year. These costs are essentially to reduce human depredation on the pond stocks and will vary widely with site location and physical accessibility. They will tend to be lower for smaller operations where families live and work on the land.

On-Site Housing represents average reported costs of maintaining residential quarters for an on-site farm manager and minimum crew in Belize.

Administration costs consists of administrative salaries. This is estimated at a flat rate during the construction and start up periods, then tied to total production at five percent of sales.

Sales Expense represents brokers fees, commissions, and related selling costs, estimated at fifteen percent of sales.

Exportation costs are based on the current rates quoted by TACA of \$0.22 per pound of product shipped (minimum 1,100 lb/shipment).

Detailed cash flow projections based on these factors are presented in Appendix D. Separate projections are developed for each alternative farm size and for each of three time periods, as three, four, and five years.



6.2 Sensitivity Analysis

Any estimate, however carefully made, will differ, to some degree, from the eventually occurring reality. Sensitivity analysis tests the effect of substantial variance in key assumptions, singularly and combined, on both cash flow and total project economic viability. It does not imply that these tested variations will occur, but does provide additional assurances regarding the appropriateness of project design as well as an indication of possible contingency requirements.

The four primary variables for prawn farm operation in Belize are farm size, which gives rise to certain economies of scale; sales price (largely externally determined); production rate (internally determined); and construction costs of ponds and related facilities. Farm size is considered earlier in this report, and costs and income streams are estimated in detail for the three sizes of 25, 75, and 125 acres of pond surface area, corresponding to total farm sizes of 50, 150, and 250 acres respectively.

Sales price FOB Belize is shown initially at the current average rate of \$6.50 per pound, increasing at ten percent per calendar year. This price is taken as externally given since Belize will not be the majority producer and cannot control the market. A ten percent annual increase in price for this product seems conservative given recent history and increasing demand for aquaculture products. The price sensitivity analysis presented here examines the effect of a more static market, with a five percent annual price increase instead of a ten percent increase. This five percent rate approximates the current underlying U.S. inflation and it is unlikely that prices for fresh seafoods will decrease below this rate.

Production rates of 200, 225, 250 and 275 pounds per acre per month are achievable in a well-managed and maintained production operation, consistent with the staffing and related budgets presented here. Extremely well run operation may actually achieve rates above these figures. For purposes of sensitivity analysis, a ten percent decrease in production rates is presumed.

Pond and facilities construction costs represent the largest single cost element in these alternative projections. They are also subject to considerable variation as a function of project site topography, physical location, and ease of access. They may be decreased to the extent that the owners labor or equipment may be employed, or with timing of construction. For purposes of comparison analysis, a 25% increase in these costs is presumed in the first six months of operation.

6.3 Results and Conclusions

The results of the economic analyses for the three prawn farm size alternatives are summarized in Table 7. The 25 acre farm requires four years of operation to break even, but is then profitable (net present value is positive) at discount rates as high as 20% per year. The larger farms appear to be profitable in three years or less.



If product price increases by only five percent per year, for an average of \$6.83, \$7.01, and \$7.18 per pound over three, four, and five years respectively, the 25 acre farm requires five years to be profitable, and then is limited to a maximum 18% discount rate. The 75 acre farm is profitable in year three at a 14% rate, or in year four at a 20% rate. The 125 acre farm is profitable in year three at 18% (See Table 8).

If production rates are ten percent below those forecast, reflecting less efficient operations and management, the 25 acre farm is still profitable in five years at 20% rates. The 75 acre farm is profitable in year three at a 12% rate, or in year four at 20% (See Table 9).

If construction costs increase twenty-five percent, the 25 acre farm is profitable in four years at 14% or in five years at 20%. The 75 acre farm requires three years at 14% or four years at 20% (See Table 10).

If all three factors of price decrease, production decrease and construction cost increase are combined in a reasonable worst-case scenario, the results are as shown in Table 11. The 25 acre farm requires five full years to turn the corner on a cash flow basis and is not then profitable even at discount rates as low as 12%. Further extensions of time might result in a profit, but maintenance and facilities replacement costs must also increase. It is unlikely that all three of these variable factors would act in concert, but should they do so, the 25 acre farm would be an unprofitable operation.

In contrast, the 75 acre farm is profitable in the fourth year at a discount rate of 14%, and in five years at rates up to 20%. The 125 acre farm is profitable in the fourth year at 16%, and in five years at 20%. Either of these size alternatives is economically viable and profitable in a reasonable worst-case scenario.

The value of the separate analysis of variables presented here is that it clearly shows that while construction costs are the largest single cost element, with the highest degree of uncertainty, production rates and farm management efficiency have the largest impact on profitability. This is particularly significant in that these rates are essentially internally determined. The financial success of the venture is literally in the hands of the producer.

Comparison Cash Flow Projections for Belize Prawn Farms

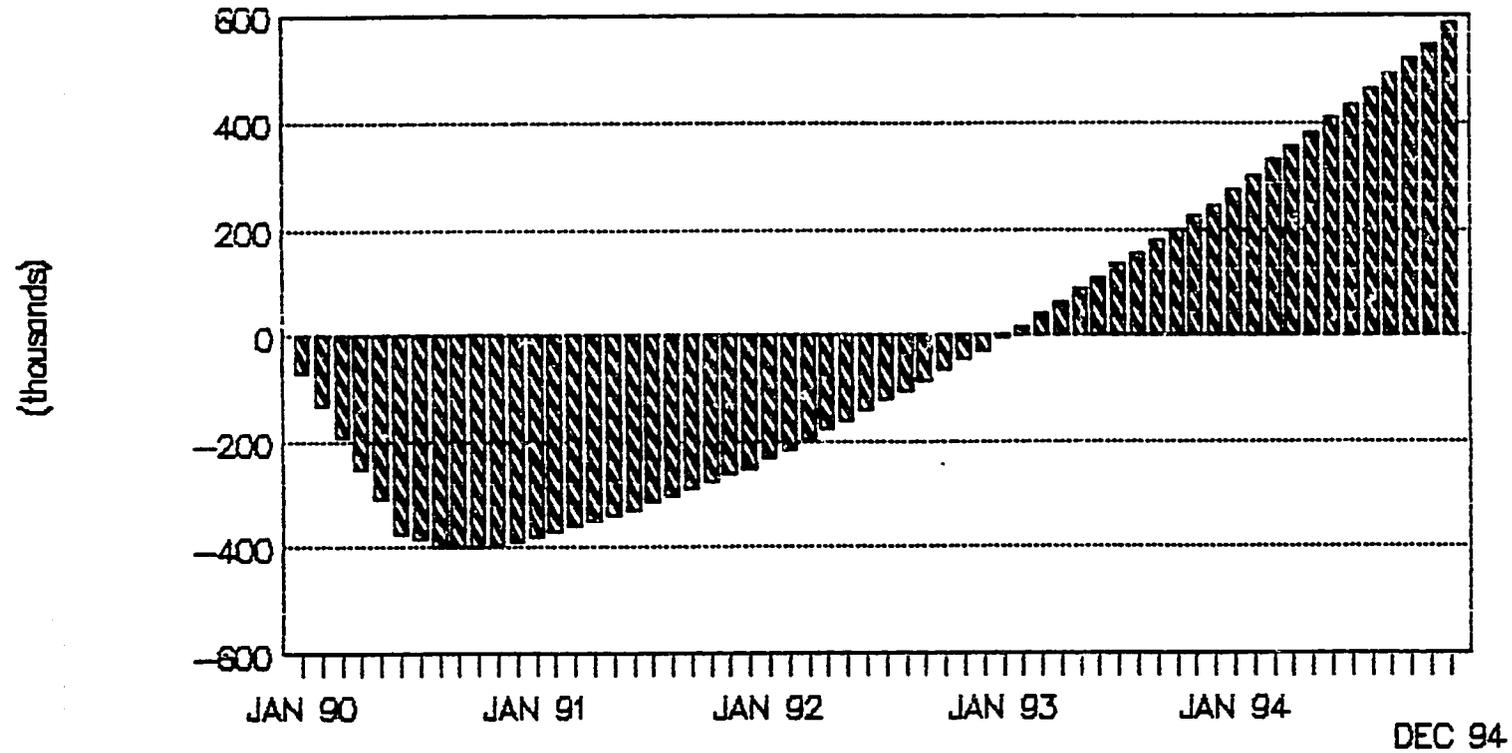
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	25 Acres			75 Acres			125 Acres			
	3 Years	4 Years	5 Years	3 Years	4 Years	5 Years	3 Years	4 Years	5 Years	
((-SALES VALUE-))										
POUNDS EXPORTED	169,400	251,900	334,400	506,250	753,750	1,001,250	843,750	1,256,250	1,668,750	
AVERAGE SALES PRICE	7.15	7.55	7.94	7.15	7.55	7.94	7.15	7.55	7.94	
TOTAL SALES VALUE	\$1,260,438	\$1,974,888	2,761,113	\$3,768,638	5,911,988	8,270,663	6,281,063	9,853,313	13,784,438	
LAND RESALE VALUE	\$13,000	\$13,650	14,335	\$39,100	41,055	43,108	65,100	68,355	71,773	
((-CASH OUT FLOW-))										
HATCHERY BLD. & OPER.	\$124,980	\$158,640	195,660	\$238,134	288,234	343,350	\$360,174	425,562	497,490	
MURS. PONDS OPER.	\$86,580	\$127,830	169,080	\$258,755	382,505	506,255	\$431,250	637,500	843,750	
G. O. POND OPERATING	\$138,520	\$204,520	270,520	\$414,000	612,000	810,000	\$690,000	1,020,000	1,350,000	
LAND COST	\$11,250	\$11,250	11,250	\$33,750	33,750	33,750	\$56,250	56,250	56,250	
CONS. MAINT. & HELL	\$366,000	\$405,600	445,200	\$1,065,000	1,171,800	1,278,600	\$1,626,000	1,762,800	1,899,600	
PUMPING & DIESEL	\$65,459	\$101,182	140,493	\$79,313	116,438	153,563	\$326,241	504,853	701,409	
HARVESTING	\$12,705	\$18,893	25,080	\$37,969	56,531	75,094	\$63,281	94,219	125,156	
COMMUNICATION	\$130,044	\$201,489	280,111	\$196,432	303,599	421,533	\$326,053	504,666	701,222	
TOTAL DIRECT COSTS	\$935,538	\$1,229,403	\$1,537,394	\$2,323,352	\$2,964,857	\$3,622,144	\$3,879,249	\$5,005,850	\$6,174,878	
FARM OFFICE	\$20,660	\$28,652	37,448	\$61,960	85,944	112,308	\$103,300	143,236	187,168	
PACKING & STORAGE	\$42,350	\$62,975	83,600	\$126,563	188,438	250,313	\$210,938	314,063	417,188	
MAINTAINANCE	\$90,940	\$122,140	153,340	\$154,454	207,494	260,534	\$181,880	244,280	306,680	
SECURITY	\$19,860	\$27,852	36,648	\$59,580	83,544	109,908	\$99,300	139,236	183,168	
ON SITE HOUSING	\$22,500	\$30,000	37,500	\$22,500	30,000	37,500	\$22,500	30,000	37,500	
TOTAL INDIRECT	\$196,310	\$271,619	\$348,536	\$425,077	\$595,420	\$770,563	\$617,918	\$870,815	\$1,131,704	
PRODUCTION COST	\$1,131,848	\$1,501,022	\$1,885,930	\$2,748,429	\$3,560,277	\$4,392,707	\$4,497,167	\$5,876,664	\$7,306,581	
ADMINISTRATION	\$94,700	\$135,950	177,200	\$283,125	406,875	530,625	\$471,875	678,125	884,375	
SALES EXPENSE	\$25,410	\$37,785	50,160	\$75,928	113,063	150,188	\$122,344	182,156	241,569	
EXPORTATION EXPENSE	\$37,268	\$55,418	73,568	\$111,375	165,825	220,275	\$185,625	276,375	367,125	
TOT. OPERATING EXP.	\$157,378	\$229,153	\$300,928	\$470,428	\$685,763	\$901,088	\$779,844	\$1,136,656	\$1,493,469	
TOTAL EXPENSES	\$1,289,226	\$1,730,175	\$2,186,858	\$3,218,866	\$4,246,039	\$5,293,794	\$5,277,010	\$7,013,320	\$8,800,050	
NET INCOME or (COST)	(\$15,789)	\$258,362	\$588,589	\$588,871	\$1,707,003	\$3,019,976	\$1,069,152	\$2,908,347	\$5,056,161	
NET PRESENT VALUE										
(ANNUAL DISC. RATE)	12.00%	(\$87,925)	\$90,746	281,884	\$254,359	\$984,192	\$1,745,092	\$507,753	\$1,708,179	\$2,952,805
	14.00%	(\$97,783)	\$68,669	243,268	\$208,104	\$888,393	\$1,583,853	\$430,019	\$1,548,945	\$2,686,515
	16.00%	(\$107,087)	\$48,027	207,577	\$164,661	\$799,397	\$1,435,845	\$355,676	\$1,398,346	\$2,437,692
	18.00%	(\$115,919)	\$28,608	174,379	\$121,875	\$712,696	\$1,293,359	\$285,011	\$1,256,766	\$2,206,540
	20.00%	(\$124,219)	\$10,522	143,799	\$82,191	\$633,146	\$1,164,153	\$218,233	\$1,124,409	\$1,992,953
OVERALL COST/POUND	7.61	6.87	6.54	6.36	5.63	5.29	6.25	5.58	5.27	

FIVE YEAR CASH FLOW

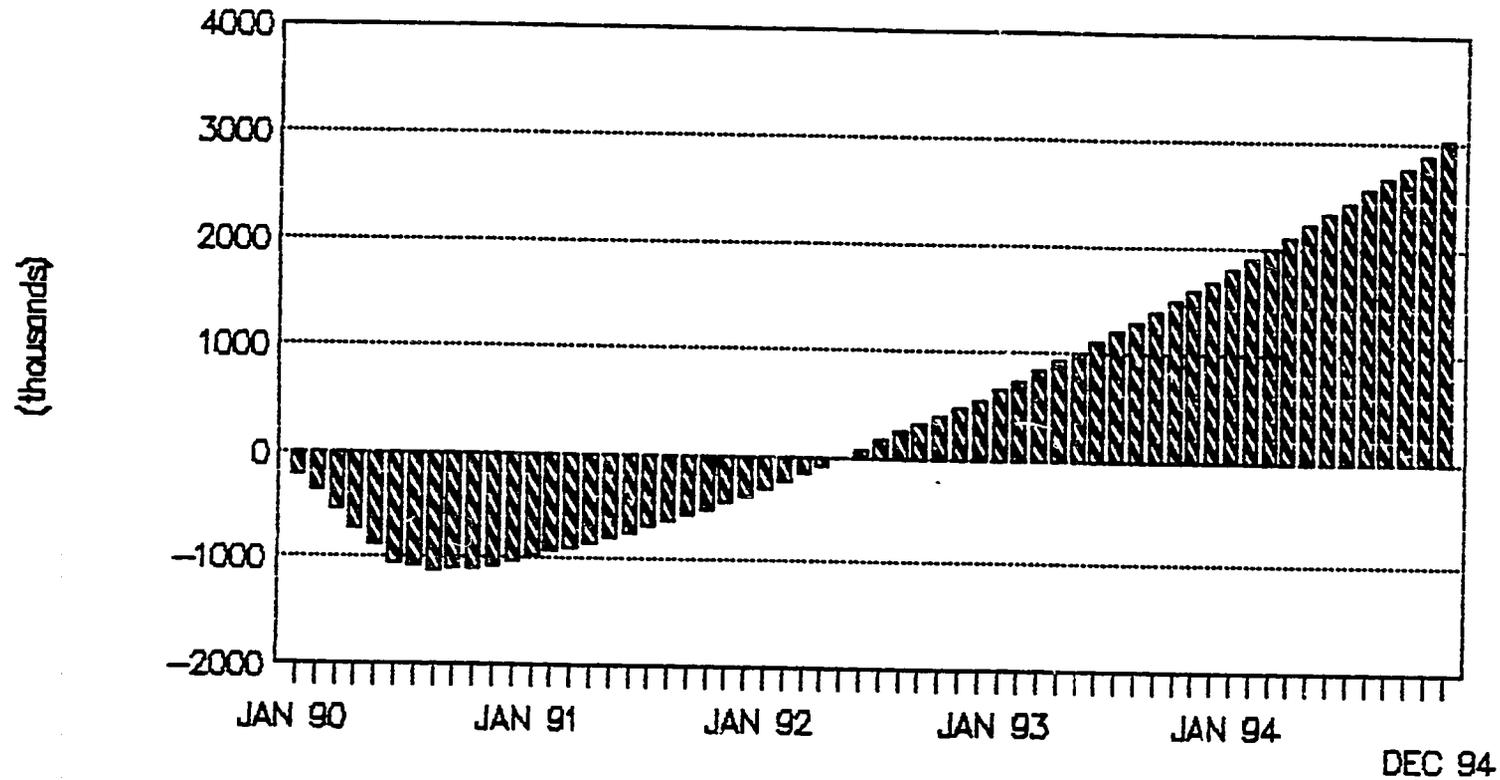
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25 AC (10 HA) PRAWN FARM

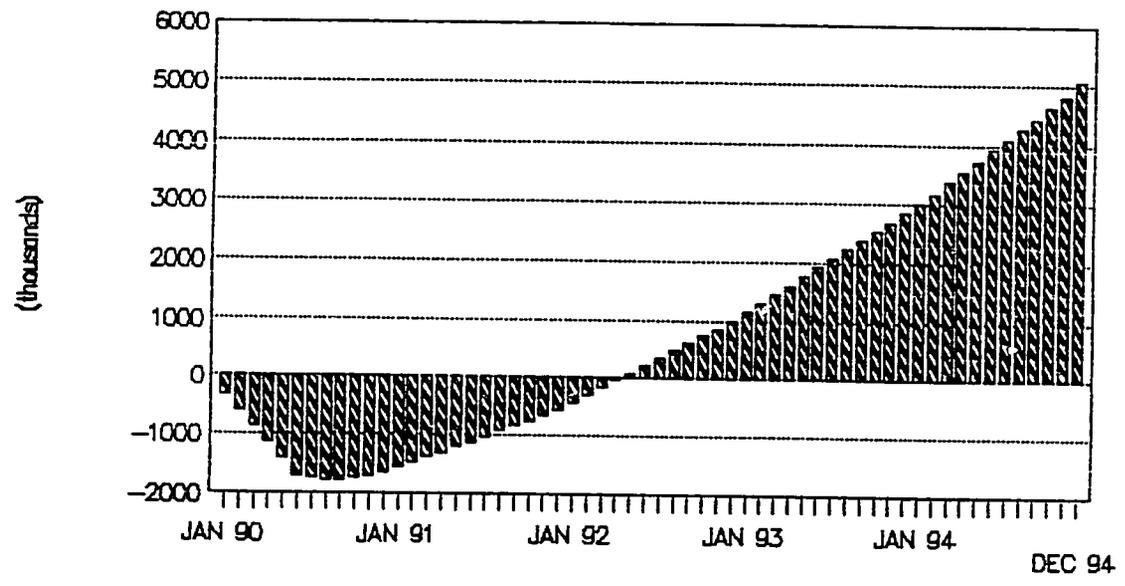


FIVE YEAR CASH FLOW

75 AC (30 HA) PRAWN FARM



FIVE YEAR CASH FLOW 125 AC (50 HA) PRAWN FARM



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Comparison Cash Flow Projections for Belize Prawn Farms: Sensitivity Analysis, Price

	25 Acres			75 Acres			125 Acres			
	3 Years	4 Years	5 Years	3 Years	4 Years	5 Years	3 Years	4 Years	5 Years	
((-SALES VALUE--))										
POUNDS EXPORTED	169,400	251,900	334,400	506,250	753,750	1,001,250	843,750	1,256,250	1,668,750	
AVERAGE SALES PRICE	6.83	7.01	7.18	6.83	7.01	7.18	6.83	7.01	7.18	
TOTAL SALES VALUE	\$1,179,888	\$1,637,350	2,452,038	\$3,526,988	5,388,188	7,343,438	5,878,313	8,980,313	12,239,063	
LAND RESALE VALUE	\$13,000	\$13,650	14,335	\$39,100	41,055	43,108	65,100	68,355	71,773	
((-CASH OUT FLOW--))										
HATCHERY BLD. & OPER.	\$124,980	\$158,640	195,660	\$238,134	288,234	343,350	\$360,174	425,562	497,490	
MURS. PONDS OPER.	386,530	\$127,830	169,090	\$238,753	382,505	506,255	\$431,250	637,500	843,750	
G. O. ROAD OPERATING	\$138,520	\$204,520	270,520	\$414,000	612,000	810,000	\$690,000	1,020,000	1,350,000	
LAND COST	\$11,250	\$11,250	11,250	\$33,750	33,750	33,750	\$56,250	56,250	56,250	
CONS. MAINT. & WELL	\$366,000	\$405,600	445,200	\$1,065,000	1,171,800	1,278,600	\$1,626,000	1,762,600	1,899,600	
PUMPING & DIESEL	\$65,459	\$101,182	140,433	\$79,313	116,438	153,563	\$326,241	504,853	701,409	
HARVESTING	\$12,705	\$18,893	25,090	\$37,969	56,531	75,094	\$63,281	94,219	125,156	
COMMUNICATION	\$130,044	\$201,489	280,111	\$196,432	303,599	421,533	\$326,053	504,666	701,222	
TOTAL DIRECT COSTS	\$935,538	\$1,229,403	\$1,537,394	\$2,323,352	\$2,964,857	\$3,622,144	\$3,879,249	\$5,005,850	\$6,174,978	
FARM OFFICE	\$20,660	\$28,652	37,448	\$61,980	85,944	112,308	\$103,300	143,236	187,168	
PACKING & STORAGE	\$42,350	\$62,975	83,600	\$126,563	188,438	250,313	\$210,938	314,063	417,188	
MAINTANCE	\$90,940	\$122,140	153,340	\$154,454	207,494	260,534	\$181,880	244,280	306,680	
SECURITY	\$19,860	\$27,852	36,648	\$59,580	83,544	109,908	\$99,300	139,236	183,168	
ON SITE HOUSING	\$22,500	\$30,000	37,500	\$22,500	30,000	37,500	\$22,500	30,000	37,500	
TOTAL INDIRECT	\$196,310	\$271,619	\$348,536	\$425,077	\$595,420	\$770,563	\$617,918	\$870,815	\$1,131,704	
PRODUCTION COST	\$1,131,848	\$1,501,022	\$1,885,930	\$2,748,429	\$3,560,277	\$4,392,707	\$4,497,167	\$5,876,664	\$7,306,581	
ADMINISTRATION	\$94,700	\$135,950	177,200	\$283,125	406,875	530,625	\$471,875	678,125	884,375	
SALES EXPENSE	\$25,410	\$37,785	50,160	\$75,938	113,063	150,188	\$122,344	182,156	241,969	
EXPORTATION EXPENSE	\$37,268	\$55,418	73,568	\$111,375	165,825	220,275	\$185,625	276,375	367,125	
TOT. OPERATING EXP.	\$157,378	\$229,153	\$300,928	\$470,438	\$685,763	\$901,088	\$779,844	\$1,136,656	\$1,493,469	
TOTAL EXPENSES	\$1,289,226	\$1,730,175	\$2,186,858	\$3,218,866	\$4,246,039	\$5,293,794	\$5,277,010	\$7,013,320	\$8,800,050	
NET INCOME or (COST)	(\$96,339)	(\$79,175)	\$279,514	\$347,221	\$1,183,203	\$2,052,751	\$666,402	\$2,035,347	\$3,510,786	
NET PRESENT VALUE										
(ANNUAL DISC. RATE)	12.00%	(\$149,531)	(\$148,048)	80,332	\$69,539	\$614,412	\$1,140,617	\$199,721	\$1,091,880	\$1,945,347
	14.00%	(\$156,735)	(\$157,006)	55,299	\$31,215	\$578,976	\$1,019,788	\$135,203	\$966,583	\$1,746,407
	16.00%	(\$163,516)	(\$165,346)	32,105	(\$4,799)	\$468,888	\$908,778	\$73,532	\$348,058	\$1,560,333
	18.00%	(\$169,933)	(\$173,156)	10,532	(\$40,166)	\$400,602	\$801,818	\$14,943	\$736,609	\$1,387,304
	20.00%	(\$175,944)	(\$180,394)	(9,337)	(\$72,983)	\$337,943	\$704,744	(\$40,391)	\$632,404	\$1,227,270
OVERALL COST/POUND	7.61	6.87	6.54	6.36	5.63	5.29	6.25	5.58	5.27	

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Comparison Cash Flow Projections for Belize Prawn Farms: Sensitivity Analysis, Production

	25 Acres			75 Acres			125 Acres			
	3 Years	4 Years	5 Years	3 Years	4 Years	5 Years	3 Years	4 Years	5 Years	
((-SALES VALUE-))										
POUNDS EXPORTED	152,463	226,719	300,975	455,622	678,366	901,110	759,330	1,130,538	1,501,746	
AVERAGE SALES PRICE	7.15	7.55	7.94	7.15	7.55	7.94	7.15	7.55	7.94	
TOTAL SALES VALUE	\$1,134,420	\$1,777,476	2,485,136	\$3,391,748	5,320,711	7,443,461	5,652,604	8,867,266	12,404,878	
LAND RESALE VALUE	\$13,000	\$13,650	14,335	\$39,100	41,055	43,108	65,100	68,355	71,773	
((-CASH OUT FLOW-))										
HATCHERY BLD. & OPER.	\$124,980	\$158,640	195,660	\$238,134	288,234	343,350	\$360,174	425,562	497,490	
NURS. PONDS OPER.	\$86,580	\$127,830	169,080	\$258,755	382,505	506,255	\$431,250	637,500	843,750	
S.O. POND OPERATING	\$138,520	\$204,520	270,520	\$414,000	612,000	810,000	\$690,000	1,020,000	1,350,000	
LAND COST	\$11,250	\$11,250	11,250	\$33,750	33,750	33,750	\$56,250	56,250	56,250	
CONS. MAINT. & WELL	\$366,000	\$405,600	445,200	\$1,065,000	1,171,800	1,278,600	\$1,626,000	1,762,800	1,899,600	
PUMPING & DIESEL	\$65,459	\$101,182	140,493	\$79,313	116,438	153,563	\$326,241	504,853	701,409	
HARVESTING	\$11,435	\$17,004	22,573	\$34,172	50,877	67,583	\$56,950	84,790	112,631	
COMMUNICATION	\$130,044	\$201,489	280,111	\$195,432	303,599	421,533	\$326,053	504,666	701,222	
TOTAL DIRECT COSTS	\$934,268	\$1,227,515	\$1,534,888	\$2,319,555	\$2,959,203	\$3,614,634	\$3,872,918	\$4,996,421	\$6,162,352	
FARM OFFICE	\$20,660	\$28,652	37,448	\$61,980	85,944	112,308	\$103,300	143,236	187,168	
PACKING & STORAGE	\$38,116	\$56,680	75,244	\$113,906	169,592	225,278	\$189,833	282,635	375,437	
MAINTANANCE	\$90,940	\$122,140	154,740	\$154,454	207,494	260,534	\$181,880	244,280	306,680	
SECURITY	\$19,860	\$27,852	36,648	\$59,580	83,544	109,908	\$99,300	139,236	183,168	
ON SITE HOUSING	\$22,500	\$30,000	37,500	\$22,500	30,000	37,500	\$22,500	30,000	37,500	
TOTAL INDIRECT	\$192,076	\$265,224	\$340,180	\$412,420	\$576,574	\$745,528	\$596,813	\$839,387	\$1,089,953	
PRODUCTION COST	\$1,126,344	\$1,492,838	\$1,875,067	\$2,731,975	\$3,535,777	\$4,360,161	\$4,469,730	\$5,835,808	\$7,252,305	
ADMINISTRATION	\$86,232	\$123,360	160,488	\$257,811	369,183	480,555	\$429,665	615,269	800,873	
SALES EXPENSE	\$22,669	\$34,008	45,146	\$68,343	101,755	135,167	\$110,103	163,928	217,753	
EXPORTATION EXPENSE	\$33,542	\$49,878	66,215	\$100,237	149,241	198,244	\$167,053	248,718	330,384	
TOT. OPERATING EXP.	\$142,643	\$207,246	\$271,848	\$426,391	\$620,178	\$813,966	\$706,820	\$1,027,915	\$1,349,010	
TOTAL EXPENSES	\$1,268,986	\$1,700,084	\$2,146,916	\$3,158,366	\$4,155,955	\$5,174,127	\$5,176,550	\$6,863,723	\$8,601,315	
NET INCOME or (COST)	(\$121,567)	\$91,043	\$352,556	\$272,482	\$1,205,811	\$2,312,442	\$541,154	\$2,071,898	\$3,875,336	
NET PRESENT VALUE										
(ANNUAL DISC. RATE)	12.00%	(\$171,309)	(\$32,981)	118,182	\$5,075	\$613,763	\$1,254,623	\$91,748	\$1,089,973	\$2,134,256
	14.00%	(\$177,989)	(\$49,158)	88,894	(\$31,695)	\$535,591	\$1,121,264	\$29,841	\$960,157	\$1,914,498
	16.00%	(\$184,260)	(\$64,238)	61,886	(\$66,173)	\$463,052	\$998,966	(\$29,273)	\$837,514	\$1,709,342
	18.00%	(\$190,179)	(\$78,380)	36,826	(\$100,071)	\$392,468	\$881,348	(\$85,371)	\$722,343	\$1,518,936
	20.00%	(\$195,707)	(\$91,509)	13,800	(\$131,453)	\$327,786	\$774,806	(\$138,294)	\$614,800	\$1,343,172
OVERALL COST/POUND	8.32	7.50	7.13	6.93	6.13	5.74	6.82	6.07	5.73	

5
5

Comparison Cash Flow Projections for Belize Prawn Farms: Sensitivity Analysis, Construction

	25 Acres			75 Acres			125 Acres		
	3 Years	4 Years	5 Years	3 Years	4 Years	5 Years	3 Years	4 Years	5 Years
((-SALES VALUE-))									
POUNDS EXPORTED	169,400	251,900	334,400	506,250	753,750	1,001,250	843,750	1,256,250	1,668,750
AVERAGE SALES PRICE	7.15	7.55	7.94	7.15	7.55	7.94	7.15	7.55	7.94
TOTAL SALES VALUE	\$1,260,438	\$1,974,888	2,761,113	\$3,768,638	5,911,988	8,270,663	6,281,063	9,853,313	13,784,438
LAND RESALE VALUE	\$13,000	\$13,650	14,335	\$39,100	41,055	43,108	65,100	68,355	71,773
((-CASH OUT FLOW-))									
HATCHERY BLD. & OPER.	\$124,980	\$158,640	195,660	\$238,134	288,234	343,350	\$360,174	425,562	497,490
MURS. PONDS OPER.	\$86,580	\$127,830	169,080	\$254,755	382,505	506,255	\$431,250	637,500	843,750
B.L. POND OPERATING	\$138,520	\$204,520	270,520	\$414,000	612,000	810,000	\$690,000	1,020,000	1,350,000
LAND COST	\$11,250	\$11,250	11,250	\$33,750	33,750	33,750	\$56,250	56,250	56,250
CONS. MAINT. & WELL	\$432,750	\$472,350	511,950	\$1,264,500	1,371,300	1,478,100	\$1,947,000	2,083,800	2,220,600
PUMPING & DIESEL	\$65,459	\$101,182	140,493	\$79,313	116,438	153,563	\$326,241	504,853	701,409
HARVESTING	\$12,705	\$18,893	25,080	\$37,969	56,531	75,094	\$63,281	94,219	125,156
COMMUNICATION	\$130,044	\$201,489	280,111	\$196,432	303,599	421,533	\$326,053	504,666	701,222
TOTAL DIRECT COSTS	\$1,002,288	\$1,296,153	\$1,604,144	\$2,522,822	\$3,164,357	\$3,821,644	\$4,200,249	\$5,326,850	\$6,495,878
FARM OFFICE	\$20,660	\$28,652	37,448	\$61,980	85,944	112,308	\$103,300	143,236	187,168
PACKING & STORAGE	\$42,350	\$62,975	83,600	\$126,563	188,438	250,313	\$210,938	314,063	417,188
MAINTANCE	\$90,940	\$122,140	153,340	\$154,454	207,494	260,534	\$181,880	244,280	306,680
SECURITY	\$19,860	\$27,852	36,648	\$59,580	83,544	109,908	\$99,300	139,236	183,168
ON SITE HOUSING	\$22,500	\$30,000	37,500	\$22,500	30,000	37,500	\$22,500	30,000	37,500
TOTAL INDIRECT	\$196,310	\$271,619	\$348,536	\$425,077	\$595,420	\$770,563	\$617,918	\$870,815	\$1,131,704
PRODUCTION COST	\$1,198,598	\$1,567,772	\$1,952,680	\$2,947,929	\$3,759,777	\$4,592,207	\$4,818,167	\$6,197,664	\$7,627,581
ADMINISTRATION	\$34,700	\$135,950	177,200	\$283,125	406,875	530,625	\$471,875	678,125	884,375
SALES EXPENSE	\$25,410	\$37,785	50,160	\$75,938	113,063	150,188	\$122,344	182,156	241,969
EXPORTATION EXPENSE	\$37,268	\$55,418	73,568	\$111,375	165,825	220,275	\$185,625	276,375	367,125
TOT. OPERATING EXP.	\$157,378	\$229,153	\$300,928	\$470,438	\$685,763	\$901,088	\$779,844	\$1,136,656	\$1,493,469
TOTAL EXPENSES	\$1,355,976	\$1,796,925	\$2,253,608	\$3,418,366	\$4,445,539	\$5,493,294	\$5,598,010	\$7,334,320	\$9,121,050
NET INCOME or (COST)	(\$82,539)	\$191,612	\$521,839	\$389,371	\$1,507,503	\$2,820,476	\$748,152	\$2,587,347	\$4,735,161
NET PRESENT VALUE									
(ANNUAL DISC. RATE)									
12.00%	(\$152,399)	\$26,272	217,409	\$61,659	\$791,492	\$1,552,392	\$197,695	\$1,398,121	\$2,642,747
14.00%	(\$161,890)	\$4,562	179,161	\$16,499	\$696,788	\$1,392,248	\$121,722	\$1,240,648	\$2,378,218
16.00%	(\$170,830)	(\$15,716)	143,833	(\$25,872)	\$608,864	\$1,245,312	\$49,135	\$1,091,806	\$2,131,152
18.00%	(\$179,300)	(\$34,773)	110,998	(\$67,557)	\$523,265	\$1,103,928	(\$19,789)	\$951,966	\$1,901,740
20.00%	(\$187,243)	(\$52,503)	80,775	(\$106,174)	\$444,781	\$975,788	(\$84,851)	\$821,325	\$1,689,869
OVERALL COST/POUND	8.00	7.13	6.74	6.75	5.90	5.49	6.63	5.84	5.47

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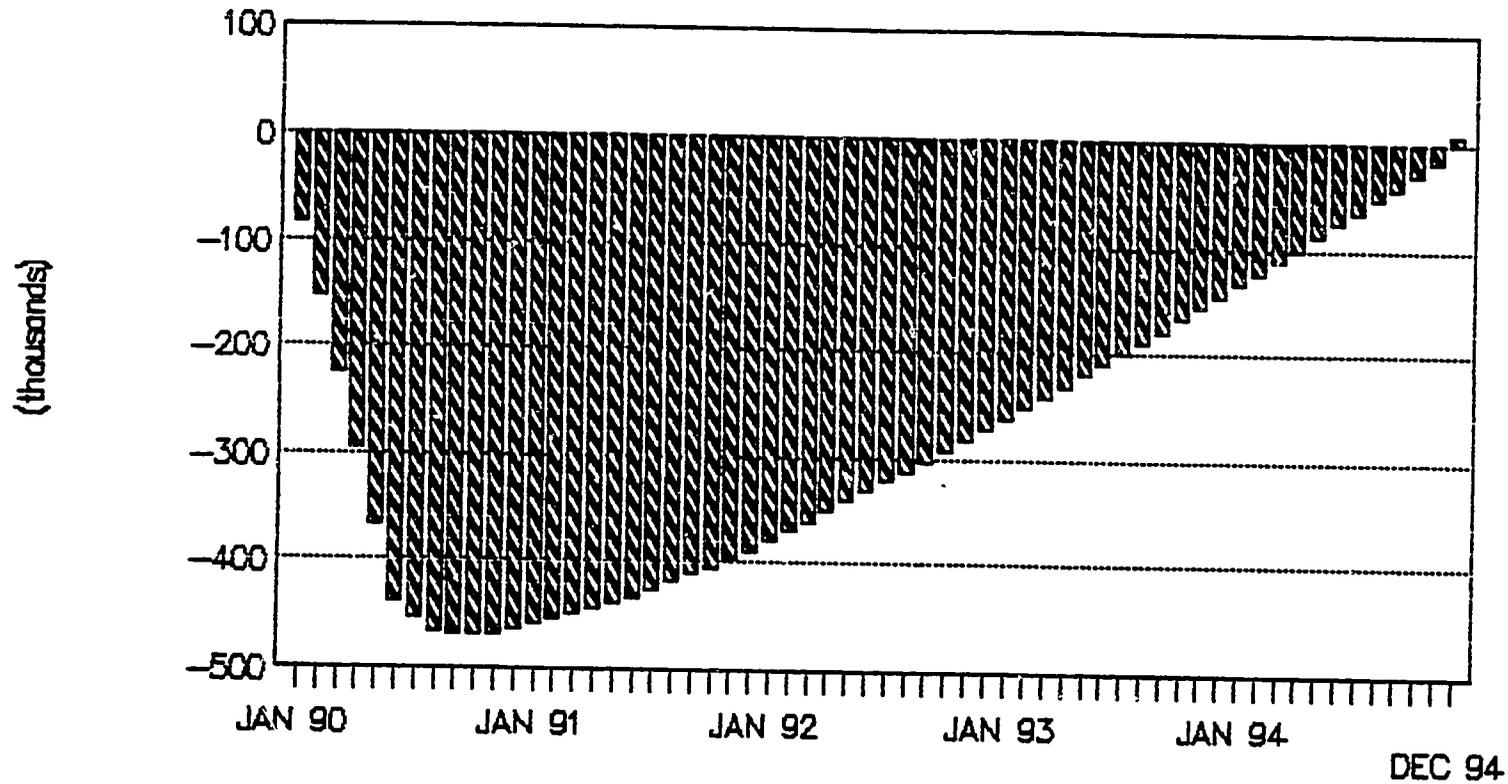
Comparison Cash Flow Projections for Belize Prawn Farms: Sensitivity Analysis, Pri/Pro/Con Combined (Reasonable Worst Case)

	25 Acres			75 Acres			125 Acres			
	3 Years	4 Years	5 Years	3 Years	4 Years	5 Years	3 Years	4 Years	5 Years	
((-SALES VALUE--))										
POUNDS EXPORTED	152,463	226,719	300,975	455,622	678,366	901,110	759,330	1,130,538	1,501,746	
AVERAGE SALES PRICE	6.83	7.01	7.18	6.83	7.01	7.18	6.83	7.01	7.18	
TOTAL SALES VALUE	\$1,061,921	\$1,620,326	2,206,949	\$3,174,266	4,849,301	6,608,979	5,290,160	8,081,644	11,014,187	
LAND RESALE VALUE	\$13,000	\$13,650	14,335	\$39,100	41,055	43,108	65,100	68,355	71,773	
((-CASH OUT FLOW--))										
HATCHERY BLD. & OPER.	\$124,980	\$156,340	195,660	\$238,134	288,234	343,350	\$360,174	425,562	497,490	
NURS. PONDS OPER.	\$86,580	\$127,130	169,080	\$258,755	382,505	506,255	\$431,250	637,500	843,750	
G.O. POND OPERATING	\$138,520	\$204,320	270,520	\$414,000	612,000	810,000	\$690,000	1,020,000	1,350,000	
LAND COST	\$11,250	\$11,250	11,250	\$33,750	33,750	33,750	\$56,250	56,250	56,250	
CONS. MAINT. & WELL	\$432,750	\$472,350	511,950	\$1,264,500	1,371,300	1,278,600	\$1,947,000	2,083,800	2,220,600	
PUMPING & DIESEL	\$65,459	\$101,182	140,493	\$73,313	116,438	153,563	\$326,241	504,853	701,409	
HARVESTING	\$11,435	\$17,004	22,573	\$34,172	50,877	67,583	\$56,950	84,790	112,631	
COMMUNICATION	\$130,044	\$201,489	280,111	\$196,432	303,599	421,533	\$326,053	504,666	701,222	
TOTAL DIRECT COSTS	\$1,001,018	\$1,294,665	\$1,601,638	\$2,519,055	\$3,158,703	\$3,614,634	\$4,193,918	\$5,317,421	\$6,483,352	
FARM OFFICE	\$20,660	\$21,532	37,448	\$61,980	85,944	112,308	\$103,300	143,236	187,168	
PACKING & STORAGE	\$38,116	\$56,680	75,244	\$113,906	169,592	225,278	\$189,833	282,635	375,437	
MAINTENANCE	\$90,940	\$122,140	153,340	\$154,454	207,494	260,534	\$181,880	244,280	306,680	
SECURITY	\$19,860	\$27,852	36,648	\$59,580	83,544	109,908	\$99,300	139,236	183,168	
ON SITE HOUSING	\$22,500	\$30,000	37,500	\$22,500	30,000	37,500	\$22,500	30,000	37,500	
TOTAL INDIRECT	\$192,076	\$265,324	\$340,180	\$412,420	\$576,574	\$745,528	\$596,813	\$839,387	\$1,089,953	
PRODUCTION COST	\$1,193,094	\$1,559,989	\$1,941,817	\$2,931,475	\$3,735,277	\$4,360,161	\$4,790,730	\$6,156,808	\$7,573,305	
ADMINISTRATION	\$86,232	\$123,360	160,488	\$257,811	369,183	480,555	\$429,665	615,269	800,873	
SALES EXPENSE	\$22,869	\$34,008	45,146	\$68,343	101,755	135,167	\$110,103	163,928	217,753	
EXPORTATION EXPENSE	\$33,542	\$49,878	66,215	\$100,237	149,241	198,244	\$167,053	248,718	330,384	
TOT. OPERATING EXP.	\$142,643	\$207,246	\$271,848	\$426,391	\$620,178	\$813,966	\$706,820	\$1,027,915	\$1,349,010	
TOTAL EXPENSES	\$1,335,736	\$1,766,834	\$2,213,666	\$3,357,866	\$4,355,455	\$5,174,127	\$5,497,550	\$7,184,723	\$8,922,315	
NET INCOME or (COST)	(\$260,815)	(\$132,657)	\$7,618	(\$144,499)	\$534,901	\$1,477,960	(\$142,291)	\$965,276	\$2,163,645	
NET PRESENT VALUE										
(ANNUAL DISC. RATE)	12.00%	(\$291,232)	(\$208,396)	(127,648)	(\$353,960)	\$38,268	\$710,608	(\$495,517)	\$225,299	\$917,580
	14.00%	(\$295,156)	(\$218,072)	(144,397)	(\$382,499)	\$29,517	\$613,618	(\$543,768)	\$127,786	\$760,191
	16.00%	(\$298,791)	(\$227,040)	(159,792)	(\$409,182)	(\$24,933)	\$524,616	(\$589,722)	\$35,761	\$613,259
	18.00%	(\$302,174)	(\$235,395)	(174,028)	(\$435,337)	(\$77,843)	\$438,971	(\$633,211)	(\$50,553)	\$476,899
	20.00%	(\$305,286)	(\$243,100)	(187,057)	(\$459,473)	(\$126,257)	\$361,346	(\$674,120)	(\$131,045)	\$351,044
OVERALL COST/POUND	8.76	7.79	7.35	7.37	6.42	5.74	7.24	6.36	5.94	

FIVE YEAR CASH FLOW

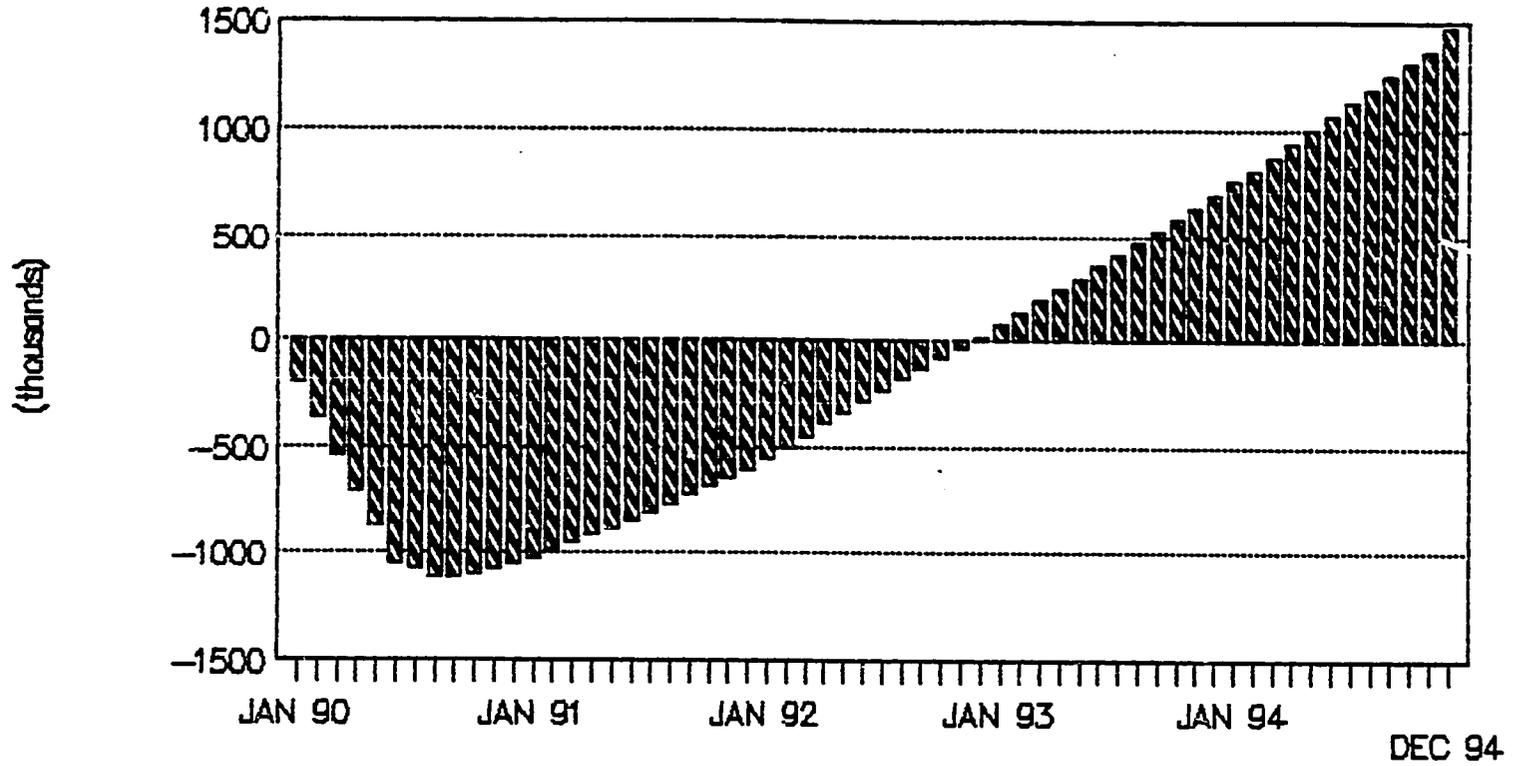
25 AC (10 HA) WORST CASE

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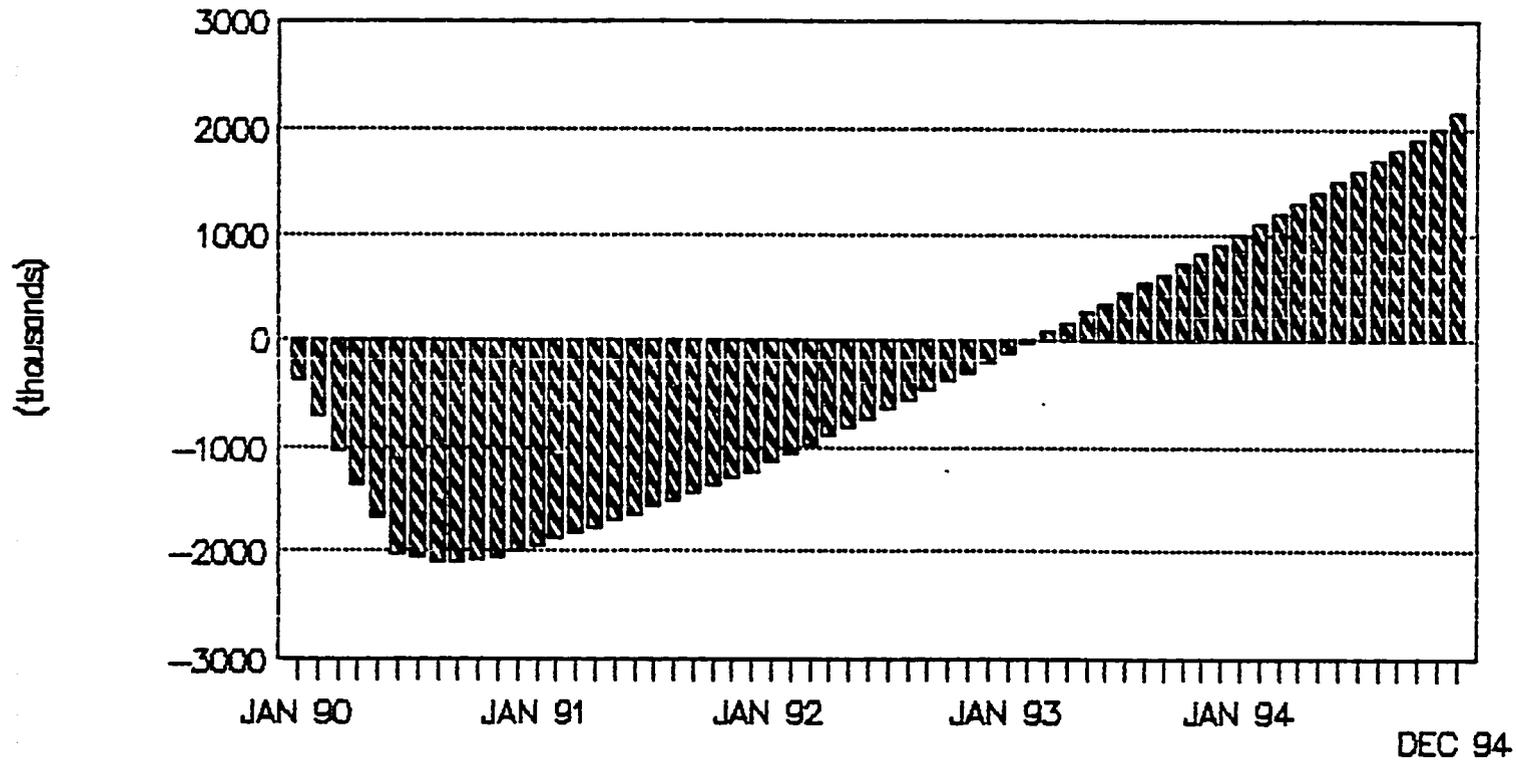
FIVE YEAR CASH FLOW

75 AC (30 HA) WORST CASE



FIVE YEAR CASH FLOW

125 AC (50 HA) WORST CASE





7.0 CONCLUSIONS AND RECOMMENDATIONS

This study has shown that a commercial freshwater prawn (*Macrobrachium rosenbergii*) operation in Belize can be an economically viable and profitable venture. Conditions of temperature, climate, and soils in Belize are suitable for such an operation. The required production technology is available and can be transferred to Belize. Quality seed stock is available in commercial quantities from Caribbean sources and there is an established market in the United States for the product.

The principal constraints to such an investment include the availability of power, an adequate road system, and reasonably priced air cargo. The analysis presented here has assumed that reliable public power will be unavailable at the project site, and the costs of a diesel electric system have been included. The public road system in Belize is such that many areas, otherwise suitable for an operation of this type, are not economically viable due to the requirement for year-round access to the site, and reasonable road transit time to an air shipment point. Air shipment of fresh and fresh frozen product is required, and air cargo costs can be a major limiting factor. Individual shipments in excess of 1100 pounds are required if reasonable cargo shipment costs are to be obtained. This means the production operation must be of such size as to insure regular shipments of this volume.

The economic analysis has shown that a commercial operation based on 25 acres of pond surface (50 acre total farm size) could be economically viable within four years at discount rates as high as 20 percent, but may not be a viable proposition under reasonable "worst case" conditions. A 75 acre (150 acre total size) farm, however, is profitable under even those conditions at four years and 14 percent, or five years and 20 percent. A 125 acre farm is similarly profitable at four years and 16 percent.

The minimum size for a commercial prawn operation in Belize should then be on the order of 75 acres of pond surface area, with a total farm area of 150 acres. Such an operation will require a peak investment of approximately \$1.2 million. Cash flow should be positive within 30 to 36 months with net profits in the fifth year of operation between \$750,000 and \$1,400,000. These conclusions and the underlying analyses presume that Government tax policy is such as to encourage a commercial undertaking of this nature.

Although not specifically discussed in this report it should be noted that Langostinos del Caribe Prawn Farm in Puerto Rico has expressed interest in joint marketing of Caribbean area prawn products. Langostinos del Caribe is the largest and most successful prawn operation in the Western Hemisphere, and has well-established market connections in the U.S. A Caribbean regional marketing association could be of significant value to prawn producers in Belize.



It should also be noted that once an operation of the size recommended here is established in Belize, then smaller farm units may well be economically viable. Such smaller farms would not need to invest in a hatchery, since the larger unit will have the capacity to produce seed stock in excess of its own production needs in the course of normal operations. The smaller farms could also take advantage of the bulk air cargo rates by timing product shipment to coincide with those from the larger farm, or by selling their product directly to the larger farm, thereby reducing both marketing and shipping costs. The formation of a prawn producers cooperative operation is also a possibility.



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APPENDIX A

Site Selection Data Sheet



SITE SELECTION DATA SHEET

LOCATION _____ DATE _____

HYDROLOGICAL

A. Seasonal Temperature Range Annual _____ Diurnal _____

B. Maximum Seasonal Surface Water Silt Level:

Month(s) _____ Amount (Range) _____

C. Solutes :

Oxygen _____ CO2 _____

CaCo3 _____ pH _____

NH4 _____ H2S _____

D. Water Turbidity (Range) _____

Light Penetration at Noon till 2 PM _____

Water Color _____

E. pH Buffer System: pH of water at beginning _____

Amt. Sodium Hydroxide to Raise pH one Unit _____

Amt. Acetic Acid to Lower pH one Unit _____

F. Soil Fertility in Surrounding Area _____

Types of Crops grown in area _____

What Kinds of Fertilizer(s) Used? _____

Name & Dosage of Pesticide(s) &/or Herbicide(s) Used? _____

Comments: _____

G. Water Shed Characteristics: Fair _____ Good _____ Excellent _____

1. Water Run-off Grade _____

2. Cost estimate to construct ponds in this area?
(\$/Tractor Hour) _____

Name/Tel./Date of Company providing estimate?

3. Proximity to Fresh and Salt water sources
Location/Distance/Seasonal Min. _____

H. Ground Water Supply? _____

Pre-existing lab report? _____ If not sample
taken? (Date/Type/Lab. Name) _____



METEOROLOGICAL FACTORS

- A. Wind Prevalence - N _____ S _____ E _____ W _____
 - 1. Velocities _____
 - 2. Seasonal Variations _____
 - 3. Last Hurricane Damaged What _____
- B. Hours of Day Light _____
- C. Air Temperature: Mean _____ Min. _____ Max. _____
- D. Precipitation (Cm./Month) Max. _____ Min. _____
- E. Worst Storm Remembered (Cm./Day & Duration) _____

EDAPHIC FACTORS

- A. Soil Type _____ (%) Clay _____; Sand _____; Sand _____
- B. Soil Profile _____
- C. Percolation Rate: (Cm./Hour) _____
- D. Leachable Soil Toxins _____
 - Certified Laboratory Report Attached _____
 - Comments: _____
- E. Soil pH & Depth of Samples (0.5M) _____ (1.0 M) _____

BIOLOGICAL FACTORS

- A. Predator Species in Area: Mammals _____; Fish _____;
 - Birds _____; Crustaceans _____; Human _____;
- B. Potential Sources of Natural foods & Fertilizers: _____

TRANSPORTATION

- A. Farm to Airport: Miles _____; Time in Rainy Season _____
- B. Best case time to Airport _____
- C. Cargo Handling: Cost of Minimum Weight Shipment to Potential Site _____
- D. Type of Road _____
- E. Usefulness of Road in Rainy Season _____
- F. Cargo Rates: Quantity Shipped / \$ / Unit:
 - Sea Cargo: (_____ Tons / \$ _____ / Minimum Wt. _____)
 - Air Cargo: (_____ Lbs. / \$ _____ / Min. Wt. _____)

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**MATERIAL SERVICES**

- A. Two Nearest Fuel Supply Locations? (Miles / Cost/Gal.) _____
- B. Equipment Availability, including Spare Parts: _____
Delivery Time _____
Belize Cost _____
Names/Tel. of Two Belize Suppliers _____
- C. Off site processing plant location _____
Cost per pound to pack product _____
Maximum Amt. Processor can handle/8 hrs. _____
- D. Closest telephone (Name/Number) _____
- E. Type & Cost of off-site electric power (\$/Kw) _____
- F. On-site Well(s)? _____
If none, Name & location of closest _____
Sample taken for analysis? _____
- G. Availability of Ice:
Type _____ Cost _____ Seasonability _____
Maximum amount available in 8 hr. period _____
Time to bring ice to pond site _____
- H. Nearest Two Off-site Cold Storage Facility Locations: _____
Provide info. on Cost/Month & Max. Amt. able to store: _____
- I. Construction Costs:
1. Earth Moving (\$/Machine Hour) _____
2. Piping (Cement & PVC delivered) _____
3. Well (Min. Cost/ Max. Depth) _____
4. Wooded Storage Building (40'X40'above ground) _____
- J. Power Costs
1. Public Utility (Name & \$/Kw) _____
2. In-House Generation Cost (\$/Kw & Min. Kw) _____

COMMUNITY SERVICES

- A. Distance to & Name of School(s) _____
- B. Distance to nearest Hospital/Doctor _____
- C. Type of off-site housing available _____
- D. Cultural Resources of Area _____
- E. Types of Protection Needed to operate in Area _____



APPENDIX B

Potential Buyers of Prawn

- 1) AGREXCO - USA Ltd., Jamaica, NY; Mr. Noah, Trade Representative
- 2) Aqua Nor Trading Co., Boston, MA; Mr. David Cawley
- 3) W. Clarke Co., Inc., Los Angeles, CA; Mr. Rodger Clarke, Import Manager
- 4) Cortez Seafood, Winterhaven, FL; Mr. Mark Taylor, Owner
- 5) Del Mar Farm Partners Ltd., Malibu, CA; Mr. Thomas W. Garlock
- 6) Dory Seafoods, Bellevue, WA; Mr. Lars Haaheim, Mr. Arne Emmo and Mr. Gordon Thomas, Sales Representatives.
- 7) Erin Sales International, Oakland, CA; Ms. Sol Barreto, General Manager
- 8) Galletti Brothers, Los Angeles, CA; Mr. Nino Palma, Sales Representative.
- 9) Hughes Markets, Los Angeles, CA; Mr. Frank Morello, Manager of Seafood Merchandising
- 10) Lombardi's Seafood, Orlando, FL; Mr. David Morehead, Vice President of Sales
- 11) Nutrifish Corp, Annadale, NJ; Mr. Joe Fischer, Sales Representative
- 12) Ocean Frozen Foods, Inc., Los Angeles, CA; Mr. George Petro, Owner
- 13) Publix Super Markets Inc., Lakeland, FL, Mr. Doug Benton, Seafood Buyer, Mr. Dave Shwarz, Seafood Buyer, Miami Division; Mr. Monte Thornton and Mr. Brian Ward, Seafood Buyers, Lakeland Division.
- 14) Red Chamber Co., Los Angeles, CA; Mr. Joe Fesler, Sales Manager
- 15) Royal Hawaiian Seafood, San Francisco, CA; Mr. Jordan Bow, Sales Representative
- 16) Sanitary Fish Co.,; Miami, FL; Mr. George Stanley
- 17) Stokes Fish Co., Leesburg, FL; Mr. Berle Stokes, Owner
- 18) Sweetwater Prawn Co.,; New York, NY; Mr. Marshal Snyder, Owner



APPENDIX C

Potential Sources of Prawn

- 1) Mr. David Dyck, Blue Creek Prawn Farm, P.O. Box #2, Orange Walk, Belize, Telephone: 501-03-22089
- 2) Mr. John B. Glude, Langostinos del Caribe, P.O. Box 1218, Road P.R. 117, Km 10.8, Sabana Grande, Puerto Rico 00747-1218 Telephone: 809-873-1026 Fax: 809-873-2255.
- 3) Blue Lobster Farms, 39664 Ave 7 1/2, Madera, CA 93638 Telephone: 209-439-3780 Fax: 209-439-2392.
- 4) Mr. Paul Magmam, Guyane Aquaculture, B.P. 477, 97331 Cayenne, French Guiana Telephone: 594-317-730
- 5) Sica Guadeloupeene D'Aquaculture, Les Plaines, Pointe-Noire, Guadeloupe 97116, French West Indies Telephone: 590-98-1183.
- 6) Mr. Henry Von Prahl, Acuamaris, Calle 56 No. 1N-41, Cali, Colombia, Telephone: 57-466767 Fax: 57-23835997.
- 7) Dr. Richard Preto, Director Nacional de Acuicultura, Departamento de Capacitacion, M.I.D.A., Santiago, Veraguas, Panama
- 8) Mr. Jorge Trees Dick, Laboratorio Macrobrachium, Cuatro Caminos, Retalhuleu, Guatemala.
- 9) Hawaii Aquafarms, P.O. Box # 317, Mountain View, HI 96771 Telephone: 808-968-6354.



APPENDIX D

AM AN

DEC 92 3 YR TOTAL

6,875	169,400
\$7.87	
\$54,106	\$1,260,438
\$13,000	\$13,000

\$2,550.00	\$124,980
\$3,437.50	\$86,580
\$5,500.00	\$138,520
\$0.00	\$11,250
\$3,300.00	\$366,000
\$2,705.31	\$65,459
\$515.63	\$12,705
\$5,410.63	\$130,044

\$23,419.06	\$935,538
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\$605.00	\$20,660
\$1,718.75	\$42,350
\$2,600.00	\$90,940
\$605.00	\$19,860
\$625.00	\$22,500

\$6,153.75	\$196,310
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\$29,572.81	\$1,131,848
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\$3,437.50	\$94,700
\$1,031.25	\$25,410
\$1,512.50	\$37,268

\$5,981.25	\$157,378
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\$35,554	\$1,289,226
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\$31,552	(\$15,789)
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(87,925)
(97,783)
(\$107,087)
(\$115,919)
(\$124,219)

\$5.17	\$7.61
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47

	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
	ESTIMATED CASH FLOW FOR A 25 ACRE (10 HECTARE) PRAWN FARM 1990 - 1993															
	(10 HA OF PONDS, 20 HA TOTAL FARM AREA = 25 AC PONDS, 50 AC FARM)															
	JAN 90	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC 90	JAN 91	FEB	MARCH	APRIL
6 ((-SALES VALUE-))																
7 POUNDS EXPORTED	0	0	0	0	0	0	0	0	2,500	3,750	4,400	5,000	5,625	5,625	5,625	5,625
8 AVERAGE SALES PRICE	\$6.50	\$6.50	\$6.50	\$6.50	\$6.50	\$6.50	\$6.50	\$6.50	\$6.50	\$6.50	\$6.50	\$6.50	\$7.15	\$7.15	\$7.15	\$7.15
9 TOTAL SALES VALUE	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$16,250	\$24,375	\$28,600	\$32,500	\$40,215	\$40,219	\$40,219	\$40,219
10 LAND RESALE VALUE	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
12 ((-CASH OUT FLOW-))																
13 HATCHERY BLD. & OPER.	\$9,480.00	\$9,480.00	\$9,480.00	\$9,480.00	\$9,480.00	\$9,480.00	\$1,850.00	\$1,850.00	\$1,850.00	\$1,850.00	\$1,850.00	\$1,850.00	\$2,200.00	\$2,200.00	\$2,200.00	\$2,200.00
14 NURS. PONDS OPER.	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$315.00	\$625.00	\$940.00	\$1,250.00	\$1,875.00	\$2,200.00	\$2,500.00	\$2,812.50	\$2,812.50	\$2,812.50	\$2,812.50
15 G.O. POND OPERATING	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$500.00	\$1,000.00	\$1,500.00	\$2,000.00	\$3,000.00	\$3,520.00	\$4,000.00	\$4,500.00	\$4,500.00	\$4,500.00	\$4,500.00
16 LAND COST (50 AC.)	\$11,250.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
17 CONS. MAINT. & WELL	\$44,500.00	\$44,500.00	\$44,500.00	\$44,500.00	\$44,500.00	\$44,500.00	\$3,300.00	\$3,300.00	\$3,300.00	\$3,300.00	\$3,300.00	\$3,300.00	\$3,300.00	\$3,300.00	\$3,300.00	\$3,300.00
18 PUMPING & DIESEL	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$812.50	\$812.50	\$812.50	\$812.50	\$1,218.75	\$1,430.00	\$1,625.00	\$2,010.94	\$2,010.94	\$2,010.94	\$2,010.94
19 HARVESTING	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$187.50	\$281.25	\$330.00	\$421.88	\$421.88	\$421.88	\$421.88
20 COMMUNICATION	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00	\$1,625.00	\$2,437.50	\$2,860.00	\$3,250.00	\$4,021.88	\$4,021.88	\$4,021.88
22 TOTAL DIRECT COSTS	\$65,730.00	\$54,480.00	\$54,480.00	\$54,480.00	\$54,480.00	\$56,107.50	\$8,087.50	\$8,902.50	\$11,025.00	\$13,362.50	\$15,490.00	\$16,900.00	\$19,267.19	\$19,267.19	\$19,267.19	\$19,267.19
24 FARM OFFICE	\$900.00	\$500.00	\$500.00	\$900.00	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00	\$550.00	\$550.00	\$550.00	\$550.00
25 PACKING & STORAGE	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$625.00	\$937.50	\$1,100.00	\$1,250.00	\$1,406.25	\$1,406.25	\$1,406.25	\$1,406.25
26 MAINTANCE	\$2,250.00	\$2,250.00	\$2,250.00	\$2,250.00	\$2,250.00	\$2,250.00	\$2,455.00	\$2,455.00	\$2,455.00	\$2,455.00	\$2,455.00	\$2,455.00	\$2,455.00	\$2,455.00	\$2,700.00	\$2,700.00
27 SECURITY	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00	\$550.00	\$550.00	\$550.00	\$550.00
28 ON SITE HOUSING	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00
30 TOTAL INDIRECT	\$4,275.00	\$3,875.00	\$3,875.00	\$4,275.00	\$3,875.00	\$3,875.00	\$4,080.00	\$4,080.00	\$4,705.00	\$5,017.50	\$5,180.00	\$5,330.00	\$5,586.25	\$5,586.25	\$5,831.25	\$5,831.25
32 PRODUCTION COST	\$70,005.00	\$58,355.00	\$58,355.00	\$58,755.00	\$58,355.00	\$59,982.50	\$12,167.50	\$12,982.50	\$15,730.00	\$18,980.00	\$20,670.00	\$22,230.00	\$24,853.44	\$24,853.44	\$25,098.44	\$25,098.44
34 ADMINISTRATION	\$1,250.00	\$1,250.00	\$1,250.00	\$1,250.00	\$1,250.00	\$1,250.00	\$1,250.00	\$1,250.00	\$1,250.00	\$1,875.00	\$2,200.00	\$2,500.00	\$2,812.50	\$2,812.50	\$2,812.50	\$2,812.50
35 SALES EXPENSE	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$375.00	\$562.50	\$660.00	\$750.00	\$843.75	\$843.75	\$843.75	\$843.75
36 EXPORTATION EXPENSE	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$550.00	\$825.00	\$968.00	\$1,100.00	\$1,237.50	\$1,237.50	\$1,237.50	\$1,237.50
38 TOT. OPERATING EXP.	\$1,250.00	\$1,250.00	\$1,250.00	\$1,250.00	\$1,250.00	\$1,250.00	\$1,250.00	\$1,250.00	\$2,175.00	\$3,262.50	\$3,828.00	\$4,350.00	\$4,893.75	\$4,893.75	\$4,893.75	\$4,893.75
40 TOTAL EXPENSES	\$71,285	\$59,605	\$59,605	\$60,005	\$59,605	\$61,233	\$13,418	\$14,233	\$17,905	\$22,243	\$24,498	\$26,580	\$29,747	\$29,747	\$29,992	\$29,992
42 NET INCOME ~ (COST)	(\$71,285)	(\$59,605)	(\$59,605)	(\$60,005)	(\$59,605)	(\$61,233)	(\$13,418)	(\$14,233)	(\$17,905)	\$2,133	\$4,102	\$5,920	\$10,472	\$10,472	\$10,227	\$10,227
44 NET PRESENT VALUE																
45 (MO. DISC. RATE)	1.00%															
46	1.17%															
47	1.33%															
48	1.50%															
49	1.67%															
51 COST / LB / MONTH	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$7.16	\$5.93	\$5.57	\$5.32	\$5.29	\$5.29	\$5.33	\$5.33

	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
	ESTIMATED CASH FLOW FOR A 25 ACRE (10 HECTARE) PRAWN FARM 1990 - 1994															
	(10 HA OF PONDS, 20 HA TOTAL FARM AREA = 25 AC PONDS, 50 AC FARM)															
	JAN 90	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC 90	JAN 91	FEB	MARCH	APRIL
6 ((-SALES VALUE--))																
7 POUNDS EXPORTED	0	0	0	0	0	0	0	0	2,500	3,750	4,400	5,000	5,625	5,625	5,625	5,625
8 AVERAGE SALES PRICE	\$6.50	\$6.50	\$6.50	\$6.50	\$6.50	\$6.50	\$6.50	\$6.50	\$6.50	\$6.50	\$6.50	\$6.50	\$6.50	\$7.15	\$7.15	\$7.15
9 TOTAL SALES VALUE	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$16,250	\$24,375	\$28,600	\$32,500	\$40,219	\$40,219	\$40,219	\$40,219
10 LAND RESALE VALUE	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
11																
12 ((-CASH OUT FLOW--))																
13 HATCHERY BLD. & OPER.	\$9,480.00	\$9,480.00	\$9,480.00	\$9,480.00	\$9,480.00	\$9,480.00	\$1,850.00	\$1,850.00	\$1,850.00	\$1,850.00	\$1,850.00	\$1,850.00	\$2,200.00	\$2,200.00	\$2,200.00	\$2,200.00
14 MUXS. PONDS OPER.	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$315.00	\$625.00	\$940.00	\$1,250.00	\$1,875.00	\$2,200.00	\$2,500.00	\$2,812.50	\$2,812.50	\$2,812.50	\$2,812.50
15 G. O. POND OPERATING	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$500.00	\$1,000.00	\$1,500.00	\$2,000.00	\$3,000.00	\$3,520.00	\$4,000.00	\$4,500.00	\$4,500.00	\$4,500.00	\$4,500.00
16 LAND COST (50 AC.)	\$11,250.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
17 CONDS. MAINT. & WELL	\$44,500.00	\$44,500.00	\$44,500.00	\$44,500.00	\$44,500.00	\$44,500.00	\$3,300.00	\$3,300.00	\$3,300.00	\$3,300.00	\$3,300.00	\$3,300.00	\$3,300.00	\$3,300.00	\$3,300.00	\$3,300.00
18 PUMPING & DIESEL	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$812.50	\$812.50	\$812.50	\$812.50	\$1,218.75	\$1,430.00	\$1,625.00	\$2,010.94	\$2,010.94	\$2,010.94	\$2,010.94
19 HARVESTING	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$187.50	\$281.25	\$330.00	\$375.00	\$421.88	\$421.88	\$421.88	\$421.88
20 COMMUNICATION	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00	\$1,625.00	\$2,437.50	\$2,860.00	\$3,250.00	\$4,021.88	\$4,021.88	\$4,021.88	\$4,021.88
21																
22 TOTAL DIRECT COSTS	\$65,730.00	\$54,480.00	\$54,480.00	\$54,480.00	\$54,480.00	\$56,107.50	\$8,087.50	\$8,902.50	\$11,025.00	\$13,962.50	\$15,490.00	\$16,900.00	\$19,257.19	\$19,257.19	\$19,257.19	\$19,257.19
23																
24 FARM OFFICE	\$900.00	\$500.00	\$500.00	\$900.00	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00	\$550.00	\$550.00	\$550.00	\$550.00
25 PACKING & STORAGE	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$625.00	\$937.50	\$1,100.00	\$1,250.00	\$1,406.25	\$1,406.25	\$1,406.25	\$1,406.25
26 MAINTANCE	\$2,250.00	\$2,250.00	\$2,250.00	\$2,250.00	\$2,250.00	\$2,250.00	\$2,455.00	\$2,455.00	\$2,455.00	\$2,455.00	\$2,455.00	\$2,455.00	\$2,455.00	\$2,455.00	\$2,700.00	\$2,700.00
27 SECURITY	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00	\$550.00	\$550.00	\$550.00	\$550.00
28 ON SITE HOUSING	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00
29																
30 TOTAL INDIRECT	\$4,275.00	\$3,875.00	\$3,875.00	\$4,275.00	\$3,875.00	\$3,875.00	\$4,080.00	\$4,080.00	\$4,705.00	\$5,017.50	\$5,180.00	\$5,330.00	\$5,586.25	\$5,586.25	\$5,831.25	\$5,831.25
31																
32 PRODUCTION COST	\$70,005.00	\$58,355.00	\$58,355.00	\$58,755.00	\$58,355.00	\$59,982.50	\$12,167.50	\$12,982.50	\$15,730.00	\$18,980.00	\$20,670.00	\$22,230.00	\$24,853.44	\$24,853.44	\$25,098.44	\$25,098.44
33																
34 ADMINISTRATION	\$1,250.00	\$1,250.00	\$1,250.00	\$1,250.00	\$1,250.00	\$1,250.00	\$1,250.00	\$1,250.00	\$1,250.00	\$1,875.00	\$2,200.00	\$2,500.00	\$2,812.50	\$2,812.50	\$2,812.50	\$2,812.50
35 SALES EXPENSE	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$375.00	\$562.50	\$660.00	\$750.00	\$843.75	\$843.75	\$843.75	\$843.75
36 EXPORTATION EXPENSE	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$550.00	\$825.00	\$968.00	\$1,100.00	\$1,237.50	\$1,237.50	\$1,237.50	\$1,237.50
37																
38 TOT. OPERATING EXP.	\$1,250.00	\$1,250.00	\$1,250.00	\$1,250.00	\$1,250.00	\$1,250.00	\$1,250.00	\$1,250.00	\$2,175.00	\$3,262.50	\$3,828.00	\$4,350.00	\$4,893.75	\$4,893.75	\$4,893.75	\$4,893.75
39																
40 TOTAL EXPENSES	\$71,255	\$59,605	\$59,605	\$60,005	\$59,605	\$61,233	\$13,418	\$14,233	\$17,905	\$22,243	\$24,498	\$26,580	\$29,747	\$29,747	\$29,992	\$29,992
41																
42 NET INCOME or (COST)	(\$71,255)	(\$59,605)	(\$59,605)	(\$60,005)	(\$59,605)	(\$61,233)	(\$13,418)	(\$14,233)	(\$16,655)	\$2,133	\$4,102	\$5,920	\$10,472	\$10,472	\$10,227	\$10,227
43																
44 NET PRESENT VALUE																
45 (MO. DISC. RATE)	1.00%															
46	1.17%															
47	1.33%															
48	1.50%															
49	1.67%															
50																
51 COST / LB / MONTH	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$7.16	\$5.93	\$5.57	\$5.32	\$5.29	\$5.29	\$5.33	\$5.33

BF	BG	BH	BI	BJ	BK	BL
JUL	AUG	SEP	OCT	NOV	DEC 94	5 YR TOTAL
6,875	6,875	6,875	6,875	6,875	6,875	334,400
\$9.53	\$9.53	\$9.53	\$9.53	\$9.53	\$9.53	
\$65,519	\$65,519	\$65,519	\$65,519	\$65,519	\$65,519	2,761,113
\$0	\$0	\$0	\$0	\$0	\$14,335	14,335
<u>\$3,085.00</u>	<u>\$3,085.00</u>	<u>\$3,085.00</u>	<u>\$3,085.00</u>	<u>\$3,085.00</u>	<u>\$3,085.00</u>	195,660
\$3,437.50	\$3,437.50	\$3,437.50	\$3,437.50	\$3,437.50	\$3,437.50	169,080
\$5,500.00	\$5,500.00	\$5,500.00	\$5,500.00	\$5,500.00	\$5,500.00	270,520
\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	11,250
\$3,300.00	\$3,300.00	\$3,300.00	\$3,300.00	\$3,300.00	\$3,300.00	445,200
\$3,275.94	\$3,275.94	\$3,275.94	\$3,275.94	\$3,275.94	\$3,275.94	140,493
\$515.63	\$515.63	\$515.63	\$515.63	\$515.63	\$515.63	25,080
\$6,551.88	\$6,551.88	\$6,551.88	\$6,551.88	\$6,551.88	\$6,551.88	280,111
<u>\$25,665.94</u>	<u>\$25,665.94</u>	<u>\$25,665.94</u>	<u>\$25,665.94</u>	<u>\$25,665.94</u>	<u>\$25,665.94</u>	\$1,537,394
\$733.00	\$733.00	\$733.00	\$733.00	\$733.00	\$733.00	37,448
\$1,718.75	\$1,718.75	\$1,718.75	\$1,718.75	\$1,718.75	\$1,718.75	83,600
\$2,600.00	\$2,600.00	\$2,600.00	\$2,600.00	\$2,600.00	\$2,600.00	153,340
\$733.00	\$733.00	\$733.00	\$733.00	\$733.00	\$733.00	36,648
\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	37,500
<u>\$6,409.75</u>	<u>\$6,409.75</u>	<u>\$6,409.75</u>	<u>\$6,409.75</u>	<u>\$6,409.75</u>	<u>\$6,409.75</u>	\$348,536
\$32,075.69	\$32,075.69	\$32,075.69	\$32,075.69	\$32,075.69	\$32,075.69	\$1,885,930
\$3,437.50	\$3,437.50	\$3,437.50	\$3,437.50	\$3,437.50	\$3,437.50	177,200
\$1,031.25	\$1,031.25	\$1,031.25	\$1,031.25	\$1,031.25	\$1,031.25	50,160
\$1,512.50	\$1,512.50	\$1,512.50	\$1,512.50	\$1,512.50	\$1,512.50	73,568
<u>\$5,981.25</u>	<u>\$5,981.25</u>	<u>\$5,981.25</u>	<u>\$5,981.25</u>	<u>\$5,981.25</u>	<u>\$5,981.25</u>	\$300,928
\$38,057	\$38,057	\$38,057	\$38,057	\$38,057	\$38,057	\$2,186,858
\$27,462	\$27,462	\$27,462	\$27,462	\$27,462	\$41,797	\$588,589
						281,884
						243,268
						207,577
						174,379
						143,799
\$5.54	\$5.54	\$5.54	\$5.54	\$5.54	\$5.54	\$6.54

15

	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
	JAN 90	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC 90	JAN 91	FEB	MARCH	APRIL
1	ESTIMATED CASH FLOW FOR A 125 HCKE (50 HECTARE) PRAWN FARM 1990 - 1992															
2	(50 HA OF PONDS, 100 HA TOTAL FARM AREA = 125 AC PONDS, 250 AC FARM)															
3																
4																
5																
6	((-SALES VALUE--))															
7	0	0	0	0	0	0	0	0	12,500	18,750	18,750	25,000	28,125	28,125	28,125	28,125
8	\$6.50	\$6.50	\$6.50	\$6.50	\$6.50	\$6.50	\$6.50	\$6.50	\$6.50	\$6.50	\$6.50	\$6.50	\$7.15	\$7.15	\$7.15	\$7.15
9	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$81,250	\$121,875	\$121,875	\$162,500	\$201,054	\$201,054	\$201,054	\$201,054
10	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
11																
12	((-CASH OUT FLOW--))															
13	\$37,915.00	\$37,915.00	\$37,915.00	\$37,915.00	\$37,915.00	\$37,915.00	\$3,590.00	\$3,590.00	\$3,590.00	\$3,590.00	\$3,590.00	\$3,590.00	\$4,308.00	\$4,308.00	\$4,308.00	\$4,308.00
14	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$1,560.00	\$3,125.00	\$4,690.00	\$6,250.00	\$3,375.00	\$3,375.00	\$12,500.00	\$14,062.50	\$14,062.50	\$14,062.50	\$14,062.50
15	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$2,500.00	\$5,000.00	\$7,500.00	\$10,000.00	\$15,000.00	\$15,000.00	\$20,000.00	\$22,500.00	\$22,500.00	\$22,500.00	\$22,500.00
16	\$56,250.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
17	\$214,000.00	\$214,000.00	\$214,000.00	\$214,000.00	\$214,000.00	\$214,000.00	\$11,400.00	\$11,400.00	\$11,400.00	\$11,400.00	\$11,400.00	\$11,400.00	\$11,400.00	\$11,400.00	\$11,400.00	\$11,400.00
18	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$4,062.50	\$4,062.50	\$4,062.50	\$4,062.50	\$6,093.75	\$6,093.75	\$8,125.00	\$10,054.69	\$10,054.69	\$10,054.69	\$10,054.69
19	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$337.50	\$1,406.25	\$1,406.25	\$2,109.38	\$2,109.38	\$2,109.38	\$2,109.38
20	\$1,500.00	\$1,500.00	\$1,500.00	\$1,500.00	\$1,500.00	\$1,500.00	\$1,500.00	\$1,500.00	\$4,062.50	\$6,093.75	\$6,093.75	\$8,125.00	\$10,054.69	\$10,054.69	\$10,054.69	\$10,054.69
21																
22	\$309,665.00	\$253,415.00	\$253,415.00	\$253,415.00	\$253,415.00	\$261,537.50	\$28,677.50	\$32,742.50	\$40,362.50	\$52,958.75	\$52,958.75	\$65,615.00	\$74,489.25	\$74,489.25	\$74,489.25	\$74,489.25
23																
24	\$4,500.00	\$2,500.00	\$2,500.00	\$4,500.00	\$2,500.00	\$2,500.00	\$2,500.00	\$2,500.00	\$2,500.00	\$2,500.00	\$2,500.00	\$2,500.00	\$2,750.00	\$2,750.00	\$2,750.00	\$2,750.00
25	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$3,125.00	\$4,687.50	\$4,687.50	\$6,250.00	\$7,031.25	\$7,031.25	\$7,031.25	\$7,031.25
26	\$4,500.00	\$4,500.00	\$4,500.00	\$4,500.00	\$4,500.00	\$4,500.00	\$4,910.00	\$4,910.00	\$4,910.00	\$4,910.00	\$4,910.00	\$4,910.00	\$4,910.00	\$4,910.00	\$4,910.00	\$4,910.00
27	\$2,500.00	\$2,500.00	\$2,500.00	\$2,500.00	\$2,500.00	\$2,500.00	\$2,500.00	\$2,500.00	\$2,500.00	\$2,500.00	\$2,500.00	\$2,500.00	\$2,750.00	\$2,750.00	\$2,750.00	\$2,750.00
28	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00
29																
30	\$12,125.00	\$10,125.00	\$10,125.00	\$12,125.00	\$10,125.00	\$10,125.00	\$10,535.00	\$10,535.00	\$13,660.00	\$15,222.50	\$15,222.50	\$16,785.00	\$18,066.25	\$18,066.25	\$18,556.25	\$18,556.25
31																
32	\$321,790.00	\$263,540.00	\$263,540.00	\$263,540.00	\$263,540.00	\$271,662.50	\$39,212.50	\$43,277.50	\$53,962.50	\$68,181.25	\$68,181.25	\$82,400.00	\$92,555.50	\$92,555.50	\$93,045.50	\$93,045.50
33																
34	\$6,250.00	\$6,250.00	\$6,250.00	\$6,250.00	\$6,250.00	\$6,250.00	\$6,250.00	\$6,250.00	\$6,250.00	\$9,375.00	\$9,375.00	\$12,500.00	\$14,062.50	\$14,062.50	\$14,062.50	\$14,062.50
35	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$1,812.50	\$2,718.75	\$3,625.00	\$4,078.12	\$4,078.12	\$4,078.12	\$4,078.12
36	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$2,750.00	\$4,125.00	\$4,125.00	\$5,500.00	\$6,187.50	\$6,187.50	\$6,187.50
37																
38	\$6,250.00	\$6,250.00	\$6,250.00	\$6,250.00	\$6,250.00	\$6,250.00	\$6,250.00	\$6,250.00	\$10,812.50	\$16,218.75	\$16,218.75	\$21,625.00	\$24,328.13	\$24,328.13	\$24,328.13	\$24,328.13
39																
40	\$328,040	\$269,790	\$269,790	\$271,790	\$269,790	\$277,313	\$45,463	\$49,528	\$64,775	\$84,400	\$84,400	\$104,025	\$116,884	\$116,884	\$117,374	\$117,374
41																
42	(\$328,040)	(\$269,790)	(\$269,790)	(\$271,790)	(\$269,790)	(\$277,913)	(\$45,463)	(\$49,528)	\$16,475	\$37,475	\$37,475	\$58,475	\$84,210	\$84,210	\$83,720	\$83,720
43																
44																
45		1.00%														
46		1.17%														
47		1.33%														
48		1.50%														
49		1.67%														
50																
51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.18	4.50	4.50	4.16	4.16	4.16	4.17	4.17

AM	AN
DEC 92	3 YR TOTAL
34,375	843,750
\$7.87	
\$270,531	6,281,063
\$65,100	65,100
<u> </u>	<u> </u>
\$4,954.00	\$360,174
\$17,187.50	\$431,250
\$27,500.00	\$690,000
\$0.00	\$56,250
\$11,400.00	\$1,626,000
\$13,526.56	\$326,241
\$2,578.13	\$63,281
\$13,526.56	\$326,053
<u> </u>	<u> </u>
\$90,672.75	\$3,879,249
\$3,025.00	\$103,300
\$8,593.75	\$210,938
\$5,200.00	\$181,880
\$3,025.00	\$99,300
\$625.00	\$22,500
<u> </u>	<u> </u>
\$20,468.75	\$617,918
\$111,141.50	\$4,497,167
\$17,187.50	\$471,875
\$4,984.38	\$122,344
\$7,562.50	\$185,625
<u> </u>	<u> </u>
\$29,734.38	\$779,844
\$140,876	\$5,277,010
\$194,755	\$1,069,152
	\$507,753
	\$430,019
	\$355,676
	\$285,011
	\$218,233
4.10	6.25

15

	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
	ESTIMATED CASH FLOW FOR A 125 ACRE (50 HECTARE) PRAWN FARM 1990 - 1993															
	(50 HA OF PONDS, 100 HA TOTAL FARM AREA = 125 AC PONDS, 250 AC FARM)															
	JAN 90	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC 90	JAN 91	FEB	MARCH	APRIL
6 ((-SALES VALUE-))																
7 POUNDS EXPORTED	0	0	0	0	0	0	0	0	12,500	18,750	18,750	25,000	28,125	28,125	28,125	28,125
8 AVERAGE SALES PRICE	\$6.50	\$6.50	\$6.50	\$6.50	\$6.50	\$6.50	\$6.50	\$6.50	\$6.50	\$6.50	\$6.50	\$6.50	\$7.15	\$7.15	\$7.15	\$7.15
9 TOTAL SALES VALUE	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$81,250	\$121,875	\$121,875	\$162,500	\$201,094	\$201,094	\$201,094	\$201,094
10 LAND RESALE VALUE	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
11																
12 ((-CASH OUT FLOW-))																
13 HATCHERY BLD. & OPER.	\$37,915.00	\$37,915.00	\$37,915.00	\$37,915.00	\$37,915.00	\$37,915.00	\$3,590.00	\$3,590.00	\$3,590.00	\$3,590.00	\$3,590.00	\$3,590.00	\$4,308.00	\$4,308.00	\$4,308.00	\$4,308.00
14 NURSERY POND OPER.	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$1,560.00	\$1,125.00	\$4,690.00	\$6,250.00	\$3,375.00	\$9,375.00	\$12,500.00	\$14,062.50	\$14,062.50	\$14,062.50	\$14,062.50
15 B.O. POND OPERATIONS	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$2,500.00	\$5,000.00	\$7,500.00	\$10,000.00	\$15,000.00	\$15,000.00	\$20,000.00	\$22,500.00	\$22,500.00	\$22,500.00	\$22,500.00
16 LAND COST (250 AC.)	\$56,250.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
17 CONG. MAINT. & WELL	\$214,000.00	\$214,000.00	\$214,000.00	\$214,000.00	\$214,000.00	\$214,000.00	\$11,400.00	\$11,400.00	\$11,400.00	\$11,400.00	\$11,400.00	\$11,400.00	\$11,400.00	\$11,400.00	\$11,400.00	\$11,400.00
18 DIESEL, ELEC. & PUMP.	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$4,062.50	\$4,062.50	\$4,062.50	\$4,062.50	\$6,093.75	\$6,093.75	\$8,125.00	\$10,054.69	\$10,054.69	\$10,054.69	\$10,054.69
19 HARVESTING	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$937.50	\$1,406.25	\$1,406.25	\$1,875.00	\$2,109.38	\$2,109.38	\$2,109.38	\$2,109.38
20 COMMUNICATIONS	\$1,500.00	\$1,500.00	\$1,500.00	\$1,500.00	\$1,500.00	\$1,500.00	\$1,500.00	\$1,500.00	\$4,062.50	\$6,093.75	\$6,093.75	\$8,125.00	\$10,054.69	\$10,054.69	\$10,054.69	\$10,054.69
21																
22 TOTAL DIRECT COSTS	\$309,665.00	\$253,415.00	\$253,415.00	\$253,415.00	\$253,415.00	\$261,537.50	\$28,677.50	\$32,742.50	\$40,302.50	\$52,958.75	\$52,958.75	\$65,615.00	\$74,489.25	\$74,489.25	\$74,489.25	\$74,489.25
23																
24 FARM OFFICE	\$4,500.00	\$2,500.00	\$2,500.00	\$4,500.00	\$2,500.00	\$2,500.00	\$2,500.00	\$2,500.00	\$2,500.00	\$2,500.00	\$2,500.00	\$2,500.00	\$2,750.00	\$2,750.00	\$2,750.00	\$2,750.00
25 PACKING & STORAGE	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$3,125.00	\$4,687.50	\$4,687.50	\$6,250.00	\$7,031.25	\$7,031.25	\$7,031.25	\$7,031.25
26 MAINTANCE	\$4,500.00	\$4,500.00	\$4,500.00	\$4,500.00	\$4,500.00	\$4,500.00	\$4,910.00	\$4,910.00	\$4,910.00	\$4,910.00	\$4,910.00	\$4,910.00	\$4,910.00	\$5,400.00	\$5,400.00	\$5,400.00
27 SECURITY	\$2,500.00	\$2,500.00	\$2,500.00	\$2,500.00	\$2,500.00	\$2,500.00	\$2,500.00	\$2,500.00	\$2,500.00	\$2,500.00	\$2,500.00	\$2,500.00	\$2,750.00	\$2,750.00	\$2,750.00	\$2,750.00
28 ON SITE HOUSING	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00
29																
30 TOTAL INDIRECT	\$12,125.00	\$10,125.00	\$10,125.00	\$12,125.00	\$10,125.00	\$10,125.00	\$10,535.00	\$10,535.00	\$13,660.00	\$15,222.50	\$15,222.50	\$16,785.00	\$18,066.25	\$18,066.25	\$18,556.25	\$18,556.25
31																
32 PRODUCTION COST	\$321,790.00	\$263,540.00	\$263,540.00	\$263,540.00	\$263,540.00	\$271,662.50	\$39,212.50	\$43,277.50	\$53,962.50	\$68,181.25	\$68,181.25	\$82,400.00	\$92,555.50	\$92,555.50	\$93,045.50	\$93,045.50
33																
34 ADMINISTRATION	\$6,250.00	\$6,250.00	\$6,250.00	\$6,250.00	\$6,250.00	\$6,250.00	\$6,250.00	\$6,250.00	\$6,250.00	\$9,375.00	\$9,375.00	\$12,500.00	\$14,062.50	\$14,062.50	\$14,062.50	\$14,062.50
35 SALES EXPENSE	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$1,812.50	\$2,718.75	\$2,718.75	\$3,625.00	\$4,078.12	\$4,078.12	\$4,078.12	\$4,078.12
36 EXPORTATION EXPENSE	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$2,750.00	\$4,125.00	\$4,125.00	\$5,500.00	\$6,187.50	\$6,187.50	\$6,187.50	\$6,187.50
37																
38 TOT. OPERATING EXP.	\$6,250.00	\$6,250.00	\$6,250.00	\$6,250.00	\$6,250.00	\$6,250.00	\$6,250.00	\$6,250.00	\$10,812.50	\$16,218.75	\$16,218.75	\$21,625.00	\$24,328.13	\$24,328.13	\$24,328.13	\$24,328.13
39																
40 TOTAL EXPENSES	\$328,040	\$269,790	\$269,790	\$271,750	\$269,790	\$277,913	\$45,463	\$49,528	\$64,775	\$84,400	\$84,400	\$104,025	\$116,884	\$116,884	\$117,374	\$117,374
41																
42 NET INCOME or (COST)	(\$328,040)	(\$269,790)	(\$269,790)	(\$271,750)	(\$269,790)	(\$277,913)	(\$45,463)	(\$49,528)	\$16,475	\$37,475	\$37,475	\$58,475	\$84,210	\$84,210	\$83,720	\$83,720
43																
44 NET PRESENT VALUE																
45 (IND. DISC. RATE)	1.00%															
46	1.17%															
47	1.33%															
48	1.50%															
49	1.67%															
50																
51 COST / LB / MONTH	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.18	4.50	4.50	4.16	4.16	4.16	4.17	4.17

87

	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
	JAN 90	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC 90	JAN 91	FEB	MARCH	APRIL
1	ESTIMATED CASH FLOW FOR A 125 ACRE (50 HECTARE) PRAWN FARM 1990 - 1994															
2	(50 HA OF PONDS, 100 HA TOTAL FARM AREA = 125 AC PONDS, 250 AC FARM)															
3																
4																
5																
6	((-SALES VALUE-))															
7	0	0	0	0	0	0	0	0	12,500	18,750	18,750	25,000	28,125	28,125	28,125	28,125
8	\$6.50	\$6.50	\$6.50	\$6.50	\$6.50	\$6.50	\$6.50	\$6.50	\$6.50	\$6.50	\$6.50	\$6.50	\$7.15	\$7.15	\$7.15	\$7.15
9	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$81,250	\$121,875	\$121,875	\$162,500	\$201,094	\$201,094	\$201,094	\$201,094
10	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
11																
12	((-CASH OUT FLOW-))															
13	\$37,915.00	\$37,915.00	\$37,915.00	\$37,915.00	\$37,915.00	\$37,915.00	\$3,590.00	\$3,590.00	\$3,590.00	\$3,590.00	\$3,590.00	\$3,590.00	\$4,308.00	\$4,308.00	\$4,308.00	\$4,308.00
14	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$1,560.00	\$3,125.00	\$4,690.00	\$6,250.00	\$3,375.00	\$3,375.00	\$12,500.00	\$14,062.50	\$14,062.50	\$14,062.50	\$14,062.50
15	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$2,500.00	\$5,000.00	\$7,500.00	\$10,000.00	\$15,000.00	\$15,000.00	\$20,000.00	\$22,500.00	\$22,500.00	\$22,500.00	\$22,500.00
16	\$56,250.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
17	\$214,000.00	\$214,000.00	\$214,000.00	\$214,000.00	\$214,000.00	\$214,000.00	\$11,400.00	\$11,400.00	\$11,400.00	\$11,400.00	\$11,400.00	\$11,400.00	\$11,400.00	\$11,400.00	\$11,400.00	\$11,400.00
18	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$4,062.50	\$4,062.50	\$4,062.50	\$4,062.50	\$6,093.75	\$6,093.75	\$6,093.75	\$10,054.69	\$10,054.69	\$10,054.69	\$10,054.69
19	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$37.50	\$1,406.25	\$1,406.25	\$1,875.00	\$2,109.38	\$2,109.38	\$2,109.38
20	\$1,500.00	\$1,500.00	\$1,500.00	\$1,500.00	\$1,500.00	\$1,500.00	\$1,500.00	\$1,500.00	\$4,062.50	\$6,093.75	\$6,093.75	\$8,125.00	\$10,054.69	\$10,054.69	\$10,054.69	\$10,054.69
21																
22	\$309,665.00	\$253,415.00	\$253,415.00	\$253,415.00	\$253,415.00	\$261,537.50	\$28,677.50	\$32,742.50	\$40,302.50	\$52,958.75	\$52,958.75	\$65,615.00	\$74,489.25	\$74,489.25	\$74,489.25	\$74,489.25
23																
24	\$4,500.00	\$2,500.00	\$2,500.00	\$4,500.00	\$2,500.00	\$2,500.00	\$2,500.00	\$2,500.00	\$2,500.00	\$2,500.00	\$2,500.00	\$2,500.00	\$2,750.00	\$2,750.00	\$2,750.00	\$2,750.00
25	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$3,125.00	\$4,687.50	\$4,687.50	\$6,250.00	\$7,031.25	\$7,031.25	\$7,031.25	\$7,031.25
26	\$4,500.00	\$4,500.00	\$4,500.00	\$4,500.00	\$4,500.00	\$4,500.00	\$4,910.00	\$4,910.00	\$4,910.00	\$4,910.00	\$4,910.00	\$4,910.00	\$4,910.00	\$4,910.00	\$5,400.00	\$5,400.00
27	\$2,500.00	\$2,500.00	\$2,500.00	\$2,500.00	\$2,500.00	\$2,500.00	\$2,500.00	\$2,500.00	\$2,500.00	\$2,500.00	\$2,500.00	\$2,500.00	\$2,750.00	\$2,750.00	\$2,750.00	\$2,750.00
28	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00
29																
30	\$12,125.00	\$10,125.00	\$10,125.00	\$12,125.00	\$10,125.00	\$10,125.00	\$10,535.00	\$10,535.00	\$13,660.00	\$15,222.50	\$15,222.50	\$16,785.00	\$18,066.25	\$18,066.25	\$18,556.25	\$18,556.25
31																
32	\$321,790.00	\$263,540.00	\$263,540.00	\$263,540.00	\$263,540.00	\$271,662.50	\$39,212.50	\$43,277.50	\$53,962.50	\$68,181.25	\$68,181.25	\$82,400.00	\$92,555.50	\$92,555.50	\$93,045.50	\$93,045.50
33																
34	\$6,250.00	\$6,250.00	\$6,250.00	\$6,250.00	\$6,250.00	\$6,250.00	\$6,250.00	\$6,250.00	\$6,250.00	\$9,375.00	\$9,375.00	\$12,500.00	\$14,062.50	\$14,062.50	\$14,062.50	\$14,062.50
35	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$1,812.50	\$2,718.75	\$2,718.75	\$3,625.00	\$4,078.12	\$4,078.12	\$4,078.12	\$4,078.12
36	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$2,750.00	\$4,125.00	\$4,125.00	\$5,500.00	\$6,187.50	\$6,187.50	\$6,187.50	\$6,187.50
37																
38	\$6,250.00	\$6,250.00	\$6,250.00	\$6,250.00	\$6,250.00	\$6,250.00	\$6,250.00	\$6,250.00	\$10,812.50	\$16,218.75	\$16,218.75	\$21,625.00	\$24,328.13	\$24,328.13	\$24,328.13	\$24,328.13
39																
40	\$328,040	\$269,790	\$269,790	\$271,790	\$269,790	\$277,913	\$45,463	\$49,528	\$64,775	\$84,400	\$84,400	\$104,025	\$116,884	\$116,884	\$117,374	\$117,374
41																
42	(\$328,040)	(\$269,790)	(\$269,790)	(\$271,790)	(\$269,790)	(\$277,913)	(\$45,463)	(\$49,528)	\$16,475	\$37,475	\$37,475	\$58,475	\$84,210	\$84,210	\$83,720	\$83,720
43																
44	NET PRESENT VALUE															
45	1.00%															
46	1.17%															
47	1.33%															
48	1.50%															
49	1.67%															
50																
51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.18	4.50	4.50	4.16	4.16	4.16	4.17	4.17

BF	BG	BH	BI	BJ	BK	BL
JULY	AUG	SEPT	OCT	NOV	DEC 94	5 YR TOTAL
34,375	34,375	34,375	34,375	34,375	34,375	1,668,750
\$9.53	\$9.53	\$9.53	\$9.53	\$9.53	\$9.53	
\$327,594	\$327,594	\$327,594	\$327,594	\$327,594	\$327,594	13,764,438
\$0	\$0	\$0	\$0	\$0	\$71,773	71,773
\$5,994.00	\$5,994.00	\$5,994.00	\$5,994.00	\$5,994.00	\$5,994.00	497,490
\$17,187.50	\$17,187.50	\$17,187.50	\$17,187.50	\$17,187.50	\$17,187.50	843,750
\$27,500.00	\$27,500.00	\$27,500.00	\$27,500.00	\$27,500.00	\$27,500.00	1,350,000
\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	56,250
\$11,400.00	\$11,400.00	\$11,400.00	\$11,400.00	\$11,400.00	\$11,400.00	1,899,600
\$16,379.69	\$16,379.69	\$16,379.69	\$16,379.69	\$16,379.69	\$16,379.69	701,409
\$2,578.13	\$2,578.13	\$2,578.13	\$2,578.13	\$2,578.13	\$2,578.13	125,156
\$16,379.69	\$16,379.69	\$16,379.69	\$16,379.69	\$16,379.69	\$16,379.69	701,222
\$97,419.00	\$97,419.00	\$97,419.00	\$97,419.00	\$97,419.00	\$97,419.00	\$6,174,878
\$3,661.00	\$3,661.00	\$3,661.00	\$3,661.00	\$3,661.00	\$3,661.00	187,168
\$8,593.75	\$8,593.75	\$8,593.75	\$8,593.75	\$8,593.75	\$8,593.75	417,188
\$5,200.00	\$5,200.00	\$5,200.00	\$5,200.00	\$5,200.00	\$5,200.00	306,680
\$3,661.00	\$3,661.00	\$3,661.00	\$3,661.00	\$3,661.00	\$3,661.00	183,168
\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	37,500
\$21,740.75	\$21,740.75	\$21,740.75	\$21,740.75	\$21,740.75	\$21,740.75	\$1,131,704
\$119,159.75	\$119,159.75	\$119,159.75	\$119,159.75	\$119,159.75	\$119,159.75	\$7,306,581
\$17,187.50	\$17,187.50	\$17,187.50	\$17,187.50	\$17,187.50	\$17,187.50	884,375
\$4,984.38	\$4,984.38	\$4,984.38	\$4,984.38	\$4,984.38	\$4,984.38	241,969
\$7,562.50	\$7,562.50	\$7,562.50	\$7,562.50	\$7,562.50	\$7,562.50	367,125
\$29,734.38	\$29,734.38	\$29,734.38	\$29,734.38	\$29,734.38	\$29,734.38	\$1,493,469
\$148,894	\$148,894	\$148,894	\$148,894	\$148,894	\$148,894	\$8,800,050
\$178,700	\$178,700	\$178,700	\$178,700	\$178,700	\$250,473	\$5,056,161
						\$2,952,805
						\$2,686,515
						\$2,437,692
						\$2,206,540
						\$1,992,953
4.33	4.33	4.33	4.33	4.33	4.33	5.27

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	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
	ESTIMATED CASH FLOW FOR A 75 ACRE (30 HECTARE) PRAWN FARM 1990 - 1992															
	(30 HA OF PONDS, 60 HA TOTAL FARM AREA = 75 AC POND, 150 AC FARM)															
	JAN 90	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC 90	JAN 91	FEB	MARCH	APRIL
6 ((-SALES VALUE-))																
7 POUNDS EXPORTED	0	0	0	0	0	0	0	0	7,500	11,250	11,250	15,000	16,875	16,875	16,875	16,875
8 AVERAGE SALES PRICE	\$6.50	\$6.50	\$6.50	\$6.50	\$6.50	\$6.50	\$6.50	\$6.50	\$6.50	\$6.50	\$6.50	\$6.50	\$7.15	\$7.15	\$7.15	\$7.15
9 TOTAL SALES VALUE	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$48,750	\$73,125	\$73,125	\$97,500	\$120,656	\$120,656	\$120,656	\$120,656
10 LAND RESALE VALUE	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
12 ((-CASH OUT FLOW-))																
13 HATCHERY BLD. & OPER.	\$22,749.00	\$22,749.00	\$22,749.00	\$22,749.00	\$22,749.00	\$22,749.00	\$2,750.00	\$2,750.00	\$2,750.00	\$2,750.00	\$2,750.00	\$2,750.00	\$3,300.00	\$3,300.00	\$3,300.00	\$3,300.00
14 NURS. PONDS OPER.	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$940.00	\$1,875.00	\$2,815.00	\$3,750.00	\$5,625.00	\$5,625.00	\$7,500.00	\$8,437.50	\$8,437.50	\$8,437.50
15 G.D. POND OPERATIONS	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$1,500.00	\$3,000.00	\$4,500.00	\$6,000.00	\$9,000.00	\$9,000.00	\$12,000.00	\$13,500.00	\$13,500.00	\$13,500.00	\$13,500.00
16 LAND COST (150 AC.)	\$33,750.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
17 CONS. MAINT. & WELL	\$133,000.00	\$133,000.00	\$133,000.00	\$133,000.00	\$133,000.00	\$133,000.00	\$132,000.00	\$3,900.00	\$8,900.00	\$8,900.00	\$8,900.00	\$8,900.00	\$8,900.00	\$8,900.00	\$8,900.00	\$8,900.00
18 DIESEL, ELEC. & PUMP.	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$1,125.00	\$1,125.00	\$1,125.00	\$1,125.00	\$1,687.50	\$1,687.50	\$2,250.00	\$2,531.25	\$2,531.25	\$2,531.25	\$2,531.25
19 HARVESTING	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$562.50	\$843.75	\$843.75	\$1,125.00	\$1,265.63	\$1,265.63	\$1,265.63
20 COMMUNICATIONS	\$1,000.00	\$1,000.00	\$1,000.00	\$1,000.00	\$1,000.00	\$1,000.00	\$1,000.00	\$1,000.00	\$2,437.50	\$3,656.25	\$3,656.25	\$4,875.00	\$6,032.81	\$6,032.81	\$6,032.81	\$6,032.81
22 TOTAL DIRECT COSTS	\$190,499.00	\$156,749.00	\$156,749.00	\$156,749.00	\$156,749.00	\$160,314.00	\$18,650.00	\$21,090.00	\$25,525.00	\$32,462.50	\$32,462.50	\$39,400.00	\$43,967.19	\$43,967.19	\$43,967.19	\$43,967.19
24 FARM OFFICE	\$2,700.00	\$1,500.00	\$1,500.00	\$2,700.00	\$1,500.00	\$1,500.00	\$1,500.00	\$1,500.00	\$1,500.00	\$1,500.00	\$1,500.00	\$1,500.00	\$1,500.00	\$1,650.00	\$1,650.00	\$1,650.00
25 PACKING & STORAGE	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$1,875.00	\$2,812.50	\$2,812.50	\$3,750.00	\$4,218.75	\$4,218.75	\$4,218.75	\$4,218.75
26 MAINTANCE	\$3,799.00	\$3,799.00	\$3,799.00	\$3,799.00	\$3,799.00	\$3,799.00	\$4,175.00	\$4,175.00	\$4,175.00	\$4,175.00	\$4,175.00	\$4,175.00	\$4,175.00	\$4,175.00	\$4,590.00	\$4,590.00
27 SECURITY	\$1,500.00	\$1,500.00	\$1,500.00	\$1,500.00	\$1,500.00	\$1,500.00	\$1,500.00	\$1,500.00	\$1,500.00	\$1,500.00	\$1,500.00	\$1,500.00	\$1,500.00	\$1,500.00	\$1,500.00	\$1,500.00
28 ON SITE HOUSING	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00
30 TOTAL INDIRECT COSTS	\$8,624.00	\$7,424.00	\$7,424.00	\$8,624.00	\$7,424.00	\$7,424.00	\$7,800.00	\$7,800.00	\$9,675.00	\$10,612.50	\$10,612.50	\$11,550.00	\$12,318.75	\$12,318.75	\$12,733.75	\$12,733.75
32 PRODUCTION COST	\$199,123.00	\$164,173.00	\$164,173.00	\$165,373.00	\$164,173.00	\$167,738.00	\$26,450.00	\$28,890.00	\$35,200.00	\$43,075.00	\$43,075.00	\$50,950.00	\$56,285.94	\$56,285.94	\$56,700.94	\$56,700.94
34 ADMINISTRATION	\$3,750.00	\$3,750.00	\$3,750.00	\$3,750.00	\$3,750.00	\$3,750.00	\$3,750.00	\$3,750.00	\$3,750.00	\$5,625.00	\$5,625.00	\$7,500.00	\$8,437.50	\$8,437.50	\$8,437.50	\$8,437.50
35 SALES EXPENSE	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$1,125.00	\$1,687.50	\$1,687.50	\$2,250.00	\$2,531.25	\$2,531.25	\$2,531.25	\$2,531.25
36 EXPORTATION EXPENSE	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$1,650.00	\$2,475.00	\$2,475.00	\$3,300.00	\$3,712.50	\$3,712.50	\$3,712.50	\$3,712.50
38 TOT. OPERATING EXP.	\$3,750.00	\$3,750.00	\$3,750.00	\$3,750.00	\$3,750.00	\$3,750.00	\$3,750.00	\$3,750.00	\$6,525.00	\$9,787.50	\$9,787.50	\$13,050.00	\$14,681.25	\$14,681.25	\$14,681.25	\$14,681.25
40 TOTAL EXPENSES	\$202,873	\$167,923	\$167,923	\$169,123	\$167,923	\$171,488	\$30,200	\$32,640	\$41,725	\$52,863	\$52,863	\$64,000	\$70,967	\$70,967	\$71,382	\$71,382
42 NET INCOME or (COST)	(\$202,873)	(\$167,923)	(\$167,923)	(\$169,123)	(\$167,923)	(\$171,488)	(\$30,200)	(\$32,640)	\$7,025	\$20,263	\$20,263	\$33,500	\$49,689	\$49,689	\$49,274	\$49,274
44 NET PRESENT VALUE																
45 (MO. DISC. RATE)	1.00%															
46	1.17%															
47	1.33%															
48	1.50%															
49	1.67%															
50																
51 COST / LB / MONTH	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$5.56	\$4.70	\$4.70	\$4.27	\$4.21	\$4.21	\$4.23	\$4.23

AM	AN
DEC 92	3 YR TOTAL
20,625	506,250
\$7.87	
\$162,319	\$3,768,638
\$39,100.00	\$39,100
<u> </u>	<u> </u>
\$3,795.00	\$238,134
\$10,312.50	\$258,755
\$16,500.00	\$414,000
\$0.00	\$33,750
\$8,900.00	\$1,065,000
\$3,093.75	\$79,313
\$1,546.88	\$37,969
\$8,115.94	\$196,432
<u> </u>	<u> </u>
\$52,284.06	\$2,323,352
\$1,815.00	\$61,980
\$5,156.25	\$126,563
\$4,420.00	\$154,454
\$1,815.00	\$59,580
\$625.00	\$22,500
<u> </u>	<u> </u>
\$13,831.25	\$425,077
\$66,095.31	\$2,748,429
\$10,312.50	\$283,125
\$3,093.75	\$75,938
\$4,537.50	\$111,375
<u> </u>	<u> </u>
\$17,943.75	\$470,438
\$84,039	\$3,218,866
\$117,380	\$588,871
	\$254,359
	\$208,104
	\$164,661
	\$121,875
	\$82,191
\$4.07	\$5.36

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	D	F	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
	ESTIMATED CASH FLOW FOR A 75 ACRE (30 HECTARE) PRAWN FARM 1990 - 1993															
	(30 HA OF PONDS, 60 HA TOTAL FARM AREA = 75 AC POND, 150 AC FARM)															
	JAN 90	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC 90	JAN 91	FEB	MARCH	APRIL
6 ((-SALES VALUE-))																
7 POUNDS EXPORTED	0	0	0	0	0	0	0	0	7,500	11,250	11,250	15,000	16,075	16,875	16,875	16,875
8 AVERAGE SALES PRICE	\$6.50	\$6.50	\$6.50	\$6.50	\$6.50	\$6.50	\$6.50	\$6.50	\$6.50	\$6.50	\$6.50	\$6.50	\$7.15	\$7.15	\$7.15	\$7.15
9 TOTAL SALES VALUE	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$48,750	\$73,125	\$73,125	\$97,500	\$120,656	\$120,656	\$120,656	\$120,656
10 LAND RESALE VALUE	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
11																
12 ((-CASH OUT FLOW-))																
13 HATCHERY BLD. & OPER.	\$22,749.00	\$22,749.00	\$22,749.00	\$22,749.00	\$22,749.00	\$22,749.00	\$2,750.00	\$2,750.00	\$2,750.00	\$2,750.00	\$2,750.00	\$2,750.00	\$3,300.00	\$3,300.00	\$3,300.00	\$3,300.00
14 MURS. PONDS OPER.	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$940.00	\$1,875.00	\$2,815.00	\$3,750.00	\$5,625.00	\$5,625.00	\$7,500.00	\$8,437.50	\$8,437.50	\$8,437.50	\$8,437.50
15 B.O. POND OPERATIONS	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$1,500.00	\$3,000.00	\$4,500.00	\$5,000.00	\$5,000.00	\$5,000.00	\$5,000.00	\$12,000.00	\$13,500.00	\$13,500.00	\$13,500.00
16 LAND COST (150 AC.)	\$33,750.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
17 COKE. MAINT. & WELL	\$133,000.00	\$133,000.00	\$133,000.00	\$133,000.00	\$133,000.00	\$133,000.00	\$8,900.00	\$8,900.00	\$8,900.00	\$8,900.00	\$8,900.00	\$8,900.00	\$8,900.00	\$8,900.00	\$8,900.00	\$8,900.00
18 DIESEL, ELEC. & PUMP.	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$1,125.00	\$1,125.00	\$1,125.00	\$1,125.00	\$1,687.50	\$1,687.50	\$2,250.00	\$2,531.25	\$2,531.25	\$2,531.25	\$2,531.25
19 HARVESTING	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$562.50	\$843.75	\$843.75	\$1,125.00	\$1,265.63	\$1,265.63	\$1,265.63	\$1,265.63
20 COMMUNICATIONS	\$1,000.00	\$1,000.00	\$1,000.00	\$1,000.00	\$1,000.00	\$1,000.00	\$1,000.00	\$1,000.00	\$2,437.50	\$3,656.25	\$3,656.25	\$4,875.00	\$6,032.81	\$6,032.81	\$6,032.81	\$6,032.81
21																
22 TOTAL DIRECT COSTS	\$190,499.00	\$156,749.00	\$156,749.00	\$156,749.00	\$156,749.00	\$160,314.00	\$18,630.00	\$21,030.00	\$25,525.00	\$32,462.50	\$32,462.50	\$39,400.00	\$43,967.19	\$43,967.19	\$43,967.19	\$43,967.19
23																
24 FARM OFFICE	\$2,700.00	\$1,500.00	\$1,500.00	\$2,700.00	\$1,500.00	\$1,500.00	\$1,500.00	\$1,500.00	\$1,500.00	\$1,500.00	\$1,500.00	\$1,500.00	\$1,650.00	\$1,650.00	\$1,650.00	\$1,650.00
25 PACKING & STORAGE	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$1,875.00	\$2,812.50	\$2,812.50	\$3,750.00	\$4,218.75	\$4,218.75	\$4,218.75	\$4,218.75
26 MAINTANCE	\$3,799.00	\$3,799.00	\$3,799.00	\$3,799.00	\$3,799.00	\$3,799.00	\$4,175.00	\$4,175.00	\$4,175.00	\$4,175.00	\$4,175.00	\$4,175.00	\$4,175.00	\$4,175.00	\$4,175.00	\$4,175.00
27 SECURITY	\$1,500.00	\$1,500.00	\$1,500.00	\$1,500.00	\$1,500.00	\$1,500.00	\$1,500.00	\$1,500.00	\$1,500.00	\$1,500.00	\$1,500.00	\$1,500.00	\$1,650.00	\$1,650.00	\$1,650.00	\$1,650.00
28 ON SITE HOUSING	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00
29																
30 TOTAL INDIRECT COSTS	\$8,624.00	\$7,424.00	\$7,424.00	\$8,624.00	\$7,424.00	\$7,424.00	\$7,800.00	\$7,800.00	\$9,675.00	\$10,612.50	\$10,612.50	\$11,550.00	\$12,318.75	\$12,318.75	\$12,733.75	\$12,733.75
31																
32 PRODUCTION COST	\$199,123.00	\$164,173.00	\$164,173.00	\$165,373.00	\$164,173.00	\$167,738.00	\$26,450.00	\$28,890.00	\$35,200.00	\$43,075.00	\$43,075.00	\$50,950.00	\$56,285.94	\$56,285.94	\$56,700.94	\$56,700.94
33																
34 ADMINISTRATION	\$3,750.00	\$3,750.00	\$3,750.00	\$3,750.00	\$3,750.00	\$3,750.00	\$3,750.00	\$3,750.00	\$3,750.00	\$5,625.00	\$5,625.00	\$7,500.00	\$8,437.50	\$8,437.50	\$8,437.50	\$8,437.50
35 SALES EXPENSE	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$1,125.00	\$1,687.50	\$1,687.50	\$2,250.00	\$2,531.25	\$2,531.25	\$2,531.25	\$2,531.25
36 EXPORTATION EXPENSE	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$1,650.00	\$2,475.00	\$2,475.00	\$3,300.00	\$3,712.50	\$3,712.50	\$3,712.50	\$3,712.50
37																
38 TOT. OPERATING EXP.	\$3,750.00	\$3,750.00	\$3,750.00	\$3,750.00	\$3,750.00	\$3,750.00	\$3,750.00	\$3,750.00	\$6,525.00	\$9,787.50	\$9,787.50	\$13,050.00	\$14,681.25	\$14,681.25	\$14,681.25	\$14,681.25
39																
40 TOTAL EXPENSES	\$202,873	\$167,923	\$167,923	\$163,123	\$167,923	\$171,488	\$30,200	\$32,640	\$41,725	\$52,863	\$52,863	\$64,000	\$70,967	\$70,967	\$71,382	\$71,382
41																
42 NET INCOME or (COST)	(\$202,873)	(\$167,923)	(\$167,923)	(\$169,123)	(\$167,923)	(\$171,488)	(\$30,200)	(\$32,640)	\$7,025	\$20,263	\$20,263	\$33,500	\$49,689	\$49,689	\$49,274	\$49,274
43																
44 NET PRESENT VALUE																
45 (ANNUAL DISC. RATE)	1.00%															
46	1.17%															
47	1.33%															
48	1.50%															
49	1.67%															
50																
51 COST / LB / MONTH	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$5.56	\$4.70	\$4.70	\$4.27	\$4.21	\$4.21	\$4.23	\$4.27

10

	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
	ESTIMATED CASH FLOW FOR A 75 ACRE (30 HECTARE) PRAWN FARM 1950 - 1994															
	(30 HA OF PONDS, 60 HA TOTAL FARM AREA = 75 AC PONDS, 150 AC FARM)															
	JAN 90	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC 90	JAN 91	FEB	MARCH	APRIL
6 ((-SALES VALUE-))																
7 POUNDS EXPORTED	0	0	0	0	0	0	0	0	7,500	11,250	11,250	15,000	16,875	16,875	16,875	16,875
8 AVERAGE SALES PRICE	\$6.50	\$6.50	\$6.50	\$6.50	\$6.50	\$6.50	\$6.50	\$6.50	\$6.50	\$6.50	\$6.50	\$6.50	\$7.15	\$7.15	\$7.15	\$7.15
9 TOTAL SALES VALUE	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$48,750	\$73,125	\$73,125	\$97,500	\$120,656	\$120,656	\$120,656	\$120,656
10 LAND RESALE VALUE	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
12 ((-CASH OUT FLOW-))																
13 HATCHERY BLD. & OPER.	\$22,749.00	\$22,749.00	\$22,749.00	\$22,749.00	\$22,749.00	\$22,749.00	\$2,750.00	\$2,750.00	\$2,750.00	\$2,750.00	\$2,750.00	\$2,750.00	\$3,300.00	\$3,300.00	\$3,300.00	\$3,300.00
14 NURS. PONDS OPER.	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$940.00	\$1,875.00	\$2,815.00	\$3,750.00	\$5,625.00	\$5,625.00	\$7,500.00	\$8,437.50	\$8,437.50	\$8,437.50	\$8,437.50
15 E. O. POND OPERATIONS	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$1,500.00	\$3,000.00	\$4,500.00	\$6,000.00	\$9,000.00	\$9,000.00	\$12,000.00	\$13,500.00	\$13,500.00	\$13,500.00	\$13,500.00
16 LAND COST (150 AC.)	\$33,750.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
17 CONG. MAINT. & WELL	\$133,000.00	\$133,000.00	\$133,000.00	\$133,000.00	\$133,000.00	\$133,000.00	\$3,900.00	\$3,900.00	\$8,900.00	\$3,900.00	\$8,900.00	\$3,900.00	\$8,900.00	\$8,900.00	\$8,900.00	\$8,900.00
18 DIESEL, ELEC. & PUMP.	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$1,125.00	\$1,125.00	\$1,125.00	\$1,125.00	\$1,125.00	\$1,687.50	\$1,687.50	\$2,250.00	\$2,531.25	\$2,531.25	\$2,531.25
19 HARVESTING	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$562.50	\$843.75	\$843.75	\$1,125.00	\$1,265.63	\$1,265.63	\$1,265.63	\$1,265.63
20 COMMUNICATIONS	\$1,000.00	\$1,000.00	\$1,000.00	\$1,000.00	\$1,000.00	\$1,000.00	\$1,000.00	\$1,000.00	\$2,437.50	\$3,656.25	\$3,656.25	\$4,875.00	\$6,032.81	\$6,032.81	\$6,032.81	\$6,032.81
22 TOTAL DIRECT COSTS	\$190,499.00	\$156,749.00	\$156,749.00	\$156,749.00	\$156,749.00	\$160,314.00	\$18,650.00	\$21,090.00	\$25,525.00	\$32,462.50	\$32,462.50	\$39,400.00	\$43,967.19	\$43,967.19	\$43,967.19	\$43,967.19
24 FARM OFFICE	\$2,700.00	\$1,500.00	\$1,500.00	\$2,700.00	\$1,500.00	\$1,500.00	\$1,500.00	\$1,500.00	\$1,500.00	\$1,500.00	\$1,500.00	\$1,500.00	\$1,650.00	\$1,650.00	\$1,650.00	\$1,650.00
25 PACKING & STORAGE	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$1,875.00	\$2,812.50	\$2,812.50	\$3,750.00	\$4,218.75	\$4,218.75	\$4,218.75	\$4,218.75
26 MAINTANCE	\$3,799.00	\$3,799.00	\$3,799.00	\$3,799.00	\$3,799.00	\$3,799.00	\$4,175.00	\$4,175.00	\$4,175.00	\$4,175.00	\$4,175.00	\$4,175.00	\$4,175.00	\$4,175.00	\$4,590.00	\$4,590.00
27 SECURITY	\$1,500.00	\$1,500.00	\$1,500.00	\$1,500.00	\$1,500.00	\$1,500.00	\$1,500.00	\$1,500.00	\$1,500.00	\$1,500.00	\$1,500.00	\$1,500.00	\$1,650.00	\$1,650.00	\$1,650.00	\$1,650.00
28 ON SITE HOUSING	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00
30 TOTAL INDIRECT COSTS	\$8,624.00	\$7,424.00	\$7,424.00	\$8,624.00	\$7,424.00	\$7,424.00	\$7,800.00	\$7,800.00	\$9,675.00	\$10,612.50	\$10,612.50	\$11,550.00	\$12,318.75	\$12,318.75	\$12,733.75	\$12,733.75
32 PRODUCTION COST	\$199,123.00	\$164,173.00	\$164,173.00	\$165,373.00	\$164,173.00	\$167,738.00	\$26,450.00	\$28,890.00	\$35,200.00	\$43,075.00	\$43,075.00	\$50,950.00	\$56,285.94	\$56,285.94	\$56,700.94	\$56,700.94
34 ADMINISTRATION	\$3,750.00	\$3,750.00	\$3,750.00	\$3,750.00	\$3,750.00	\$3,750.00	\$3,750.00	\$3,750.00	\$3,750.00	\$5,625.00	\$5,625.00	\$7,500.00	\$8,437.50	\$8,437.50	\$8,437.50	\$8,437.50
35 SALES EXPENSE	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$1,125.00	\$1,687.50	\$1,687.50	\$2,250.00	\$2,531.25	\$2,531.25	\$2,531.25	\$2,531.25
36 EXPORTATION EXPENSE	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$1,650.00	\$2,475.00	\$2,475.00	\$3,300.00	\$3,712.50	\$3,712.50	\$3,712.50	\$3,712.50
38 TOT. OPERATING EXP.	\$3,750.00	\$3,750.00	\$3,750.00	\$3,750.00	\$3,750.00	\$3,750.00	\$3,750.00	\$3,750.00	\$6,525.00	\$9,787.50	\$9,787.50	\$13,050.00	\$14,681.25	\$14,681.25	\$14,681.25	\$14,681.25
40 TOTAL EXPENSES	\$202,873	\$167,923	\$167,923	\$169,123	\$167,923	\$171,488	\$30,200	\$32,640	\$41,725	\$52,863	\$52,863	\$64,000	\$70,967	\$70,967	\$71,382	\$71,382
42 NET INCOME or (COST)	(\$202,873)	(\$167,923)	(\$167,923)	(\$169,123)	(\$167,923)	(\$171,488)	(\$30,200)	(\$32,640)	\$7,025	\$20,263	\$20,263	\$33,500	\$49,689	\$49,689	\$49,274	\$49,274
44 NET PRESENT VALUE																
45 (MO. DISC. RATE)	1.00%															
46	1.17%															
47	1.33%															
48	1.50%															
49	1.67%															
51 COST / LB / MONTH	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$5.56	\$4.70	\$4.70	\$4.27	\$4.21	\$4.21	\$4.23	\$4.23

RM	DEC 92	20,625	87.87	88.66	89.53	90.00	83,792.00	84,175.00	84,558.00	84,941.00	85,324.00	85,707.00	86,090.00	86,473.00	86,856.00	87,239.00	87,622.00	88,005.00	88,388.00	88,771.00	89,154.00	89,537.00	89,920.00	90,303.00	90,686.00	91,069.00	91,452.00	91,835.00	92,218.00	92,601.00	92,984.00	93,367.00	93,750.00	94,133.00	94,516.00	94,899.00	95,282.00	95,665.00	96,048.00	96,431.00	96,814.00	97,197.00	97,580.00	97,963.00	98,346.00	98,729.00	99,112.00	99,495.00	99,878.00	100,261.00	100,644.00	101,027.00	101,410.00	101,793.00	102,176.00	102,559.00	102,942.00	103,325.00	103,708.00	104,091.00	104,474.00	104,857.00	105,240.00	105,623.00	106,006.00	106,389.00	106,772.00	107,155.00	107,538.00	107,921.00	108,304.00	108,687.00	109,070.00	109,453.00	109,836.00	110,219.00	110,602.00	110,985.00	111,368.00	111,751.00	112,134.00	112,517.00	112,900.00	113,283.00	113,666.00	114,049.00	114,432.00	114,815.00	115,198.00	115,581.00	115,964.00	116,347.00	116,730.00	117,113.00	117,496.00	117,879.00	118,262.00	118,645.00	119,028.00	119,411.00	119,794.00	120,177.00	120,560.00	120,943.00	121,326.00	121,709.00	122,092.00	122,475.00	122,858.00	123,241.00	123,624.00	124,007.00	124,390.00	124,773.00	125,156.00	125,539.00	125,922.00	126,305.00	126,688.00	127,071.00	127,454.00	127,837.00	128,220.00	128,603.00	128,986.00	129,369.00	129,752.00	130,135.00	130,518.00	130,901.00	131,284.00	131,667.00	132,050.00	132,433.00	132,816.00	133,199.00	133,582.00	133,965.00	134,348.00	134,731.00	135,114.00	135,497.00	135,880.00	136,263.00	136,646.00	137,029.00	137,412.00	137,795.00	138,178.00	138,561.00	138,944.00	139,327.00	139,710.00	140,093.00	140,476.00	140,859.00	141,242.00	141,625.00	142,008.00	142,391.00	142,774.00	143,157.00	143,540.00	143,923.00	144,306.00	144,689.00	145,072.00	145,455.00	145,838.00	146,221.00	146,604.00	146,987.00	147,370.00	147,753.00	148,136.00	148,519.00	148,902.00	149,285.00	149,668.00	150,051.00	150,434.00	150,817.00	151,200.00	151,583.00	151,966.00	152,349.00	152,732.00	153,115.00	153,498.00	153,881.00	154,264.00	154,647.00	155,030.00	155,413.00	155,796.00	156,179.00	156,562.00	156,945.00	157,328.00	157,711.00	158,094.00	158,477.00	158,860.00	159,243.00	159,626.00	160,009.00	160,392.00	160,775.00	161,158.00	161,541.00	161,924.00	162,307.00	162,690.00	163,073.00	163,456.00	163,839.00	164,222.00	164,605.00	164,988.00	165,371.00	165,754.00	166,137.00	166,520.00	166,903.00	167,286.00	167,669.00	168,052.00	168,435.00	168,818.00	169,201.00	169,584.00	169,967.00	170,350.00	170,733.00	171,116.00	171,499.00	171,882.00	172,265.00	172,648.00	173,031.00	173,414.00	173,797.00	174,180.00	174,563.00	174,946.00	175,329.00	175,712.00	176,095.00	176,478.00	176,861.00	177,244.00	177,627.00	178,010.00	178,393.00	178,776.00	179,159.00	179,542.00	179,925.00	180,308.00	180,691.00	181,074.00	181,457.00	181,840.00	182,223.00	182,606.00	182,989.00	183,372.00	183,755.00	184,138.00	184,521.00	184,904.00	185,287.00	185,670.00	186,053.00	186,436.00	186,819.00	187,202.00	187,585.00	187,968.00	188,351.00	188,734.00	189,117.00	189,500.00	189,883.00	190,266.00	190,649.00	191,032.00	191,415.00	191,798.00	192,181.00	192,564.00	192,947.00	193,330.00	193,713.00	194,096.00	194,479.00	194,862.00	195,245.00	195,628.00	196,011.00	196,394.00	196,777.00	197,160.00	197,543.00	197,926.00	198,309.00	198,692.00	199,075.00	199,458.00	199,841.00	200,224.00	200,607.00	200,990.00	201,373.00	201,756.00	202,139.00	202,522.00	202,905.00	203,288.00	203,671.00	204,054.00	204,437.00	204,820.00	205,203.00	205,586.00	205,969.00	206,352.00	206,735.00	207,118.00	207,501.00	207,884.00	208,267.00	208,650.00	209,033.00	209,416.00	209,799.00	210,182.00	210,565.00	210,948.00	211,331.00	211,714.00	212,097.00	212,480.00	212,863.00	213,246.00	213,629.00	214,012.00	214,395.00	214,778.00	215,161.00	215,544.00	215,927.00	216,310.00	216,693.00	217,076.00	217,459.00	217,842.00	218,225.00	218,608.00	218,991.00	219,374.00	219,757.00	220,140.00	220,523.00	220,906.00	221,289.00	221,672.00	222,055.00	222,438.00	222,821.00	223,204.00	223,587.00	223,970.00	224,353.00	224,736.00	225,119.00	225,502.00	225,885.00	226,268.00	226,651.00	227,034.00	227,417.00	227,800.00	228,183.00	228,566.00	228,949.00	229,332.00	229,715.00	230,098.00	230,481.00	230,864.00	231,247.00	231,630.00	232,013.00	232,396.00	232,779.00	233,162.00	233,545.00	233,928.00	234,311.00	234,694.00	235,077.00	235,460.00	235,843.00	236,226.00	236,609.00	236,992.00	237,375.00	237,758.00	238,141.00	238,524.00	238,907.00	239,290.00	239,673.00	240,056.00	240,439.00	240,822.00	241,205.00	241,588.00	241,971.00	242,354.00	242,737.00	243,120.00	243,503.00	243,886.00	244,269.00	244,652.00	245,035.00	245,418.00	245,801.00	246,184.00	246,567.00	246,950.00	247,333.00	247,716.00	248,099.00	248,482.00	248,865.00	249,248.00	249,631.00	250,014.00	250,397.00	250,780.00	251,163.00	251,546.00	251,929.00	252,312.00	252,695.00	253,078.00	253,461.00	253,844.00	254,227.00	254,610.00	254,993.00	255,376.00	255,759.00	256,142.00	256,525.00	256,908.00	257,291.00	257,674.00	258,057.00	258,440.00	258,823.00	259,206.00	259,589.00	260,000.00	260,383.00	260,766.00	261,149.00	261,532.00	261,915.00	262,298.00	262,681.00	263,064.00	263,447.00	263,830.00	264,213.00	264,596.00	264,979.00	265,362.00	265,745.00	266,128.00	266,511.00	266,894.00	267,277.00	267,660.00	268,043.00	268,426.00	268,809.00	269,192.00	269,575.00	269,958.00	270,341.00	270,724.00	271,107.00	271,490.00	271,873.00	272,256.00	272,639.00	273,022.00	273,405.00	273,788.00	274,171.00	274,554.00	274,937.00	275,320.00	275,703.00	276,086.00	276,469.00	276,852.00	277,235.00	277,618.00	278,001.00	278,384.00	278,767.00	279,150.00	279,533.00	279,916.00	280,299.00	280,682.00	281,065.00	281,448.00	281,831.00	282,214.00	282,597.00	282,980.00	283,363.00	283,746.00	284,129.00	284,512.00	284,895.00	285,278.00	285,661.00	286,044.00	286,427.00	286,810.00	287,193.00	287,576.00	287,959.00	288,342.00	288,725.00	289,108.00	289,491.00	289,874.00	290,257.00	290,640.00	291,023.00	291,406.00	291,789.00	292,172.00	292,555.00	292,938.00	293,321.00	293,704.00	294,087.00	294,470.00	294,853.00	295,236.00	295,619.00	296,002.00	296,385.00	296,768.00	297,151.00	297,534.00	297,917.00	298,300.00	298,683.00	299,066.00	299,449.00	299,832.00	300,215.00	300,598.00	300,981.00	301,364.00	301,747.00	302,130.00	302,513.00	302,896.00	303,279.00	303,662.00	304,045.00	304,428.00	304,811.00	305,194.00	305,577.00	305,960.00	306,343.00	306,726.00	307,109.00	307,492.00	307,875.00	308,258.00	308,641.00	309,024.00	309,407.00	309,790.00	310,173.00	310,556.00	310,939.00	311,322.00	311,705.00	312,088.00	312,471.00	312,854.00	313,237.00	313,620.00	314,003.00	314,386.00	314,769.00	315,152.00	315,535.00	315,918.00	316,301.00	316,684.00	317,067.00	317,450.00	317,833.00	318,216.00	318,599.00	318,982.00	319,365.00	319,748.00	320,131.00	320,514.00	320,897.00	321,280.00	321,663.00	322,046.00	322,429.00	322,812.00	323,195.00	323,578.00	323,961.00	324,344.00	324,727.00	325,110.00	325,493.00	325,876.00	326,259.00	326,642.00	327,025.00	327,408.00	327,791.00	328,174.00	328,557.00	328,940.00	329,323.00	329,706.00	330,089.00	330,472.00	330,855.00	331,238.00	331,621.00	332,004.00	332,387.00	332,770.00	333,153.00	333,536.00	333,919.00	334,302.00	334,685.00	335,068.00	335,451.00	335,834.00	336,217.00	336,600.00	336,983.00	337,366.00	337,749.00	338,132.00	338,515.00	338,898.00	339,281.00	339,664.00	340,047.00	340,430.00	340,813.00	341,196.00	341,579.00	341,962.00	342,345.00	342,728.00	343,111.00	343,494.00	343,877.00	344,260.00	344,643.00	345,026.00	345,409.00	345,792.00	346,175.00	346,558.00	346,941.00	347,324.00	347,707.00	348,090.00	348,473.00	348,856.00	349,239.00	349,622.00	350,005.00	350,388.00	350,771.00	351,154.00	351,537.00	351,920.00	352,303.00	352,686.00	353,069.00	353,452.00	353,835.00	354,218.00	354,601.00	354,984.00	355,367.00	355,750.00	356,133.00	356,516.00	356,899.00	357,282.00	357,665.00	358,048.00	358,431.00	358,814.00	359,197.00	359,580.00	359,963.00	360,346.00	360,729.00	361,112.00	361,495.00	361,878.00	362,261.00	362,644.00	363,027.00	363,410.00	363,793.00	364,176.00	364,559.00	364,942.00	365,325.00	365,708.00	366,091.00	366,474.00	366,857.00	367,240.00	367,623.00	368,006.00	368,389.00	368,772.00	369,155.00	369,538.00	369,921.00	370,304.00	370,687.00	371,070.00	371,453.00	371,836.00	372,219.00	372,602.00	372,985.00	373,368.00	373,751.00	374,134.00	374,517.00	374,900.00	375,283.00	375,666.00	376,049.00	376,432.00	376,815.00	377,198.00	377,581.00	377,964.00	378,347.00	378,730.00	379,113.00	379,496.00	379,879.00	380,262.00	380,645.00	381,028.00	381,411.00	381,794.00	382,177.00	382,560.00	382,943.00	383,326.00	383,709.00	384,092.00	384,475.00	384,858.00	385,241.00	385,624.00	386,007.00	386,390.00	386,773.00	387,156.00	387,539.00	387,922.00	388,305.00	388,688.00	389,071.00	389,454.00	389,837.00	390,220.00	390,603.00	390,986.00	391,369.00	391,752.00	392,135.00	392,518.00	392,901.00	393,284.00	393,667.00	394,050.00	394,433.00	394,816.00	395,199.00	395,582.00	395,965.00	396,348.00	396,731.00	397,114.00	397,497.00	397,880.00	398,2
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BF	BG	BH	BI	BJ	BK	BL
JULY	AUG	SEPT	OCT	NOV	DEC 94	5 YR TOTAL
20,625	20,625	20,625	20,625	20,625	20,625	1,001,250
\$9.53	\$9.53	\$9.53	\$9.53	\$9.53	\$9.53	
\$196,556	\$196,556	\$196,556	\$196,556	\$196,556	\$196,556	8,270,663
\$0	\$0	\$0	\$0	\$0	\$43,109.00	43,108
\$4,593.00	\$4,593.00	\$4,593.00	\$4,593.00	\$4,593.00	\$4,593.00	343,350
\$10,312.50	\$10,312.50	\$10,312.50	\$10,312.50	\$10,312.50	\$10,312.50	506,255
\$16,500.00	\$16,500.00	\$16,500.00	\$16,500.00	\$16,500.00	\$16,500.00	810,000
\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	33,750
\$8,900.00	\$8,900.00	\$8,900.00	\$8,900.00	\$8,900.00	\$8,900.00	1,278,600
\$3,093.75	\$3,093.75	\$3,093.75	\$3,093.75	\$3,093.75	\$3,093.75	153,563
\$1,546.88	\$1,546.88	\$1,546.88	\$1,546.88	\$1,546.88	\$1,546.88	75,094
\$9,827.81	\$9,827.81	\$9,827.81	\$9,827.81	\$9,827.81	\$9,827.81	421,533
\$54,773.94	\$54,773.94	\$54,773.94	\$54,773.94	\$54,773.94	\$54,773.94	\$3,622,144
\$2,197.00	\$2,197.00	\$2,197.00	\$2,197.00	\$2,197.00	\$2,197.00	112,308
\$5,156.25	\$5,156.25	\$5,156.25	\$5,156.25	\$5,156.25	\$5,156.25	250,313
\$4,420.00	\$4,420.00	\$4,420.00	\$4,420.00	\$4,420.00	\$4,420.00	250,534
\$2,197.00	\$2,197.00	\$2,197.00	\$2,197.00	\$2,197.00	\$2,197.00	109,908
\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	\$625.00	37,500
\$14,595.25	\$14,595.25	\$14,595.25	\$14,595.25	\$14,595.25	\$14,595.25	\$770,563
\$69,369.19	\$69,369.19	\$69,369.19	\$69,369.19	\$69,369.19	\$69,369.19	\$4,392,707
\$10,312.50	\$10,312.50	\$10,312.50	\$10,312.50	\$10,312.50	\$10,312.50	530,625
\$3,093.75	\$3,093.75	\$3,093.75	\$3,093.75	\$3,093.75	\$3,093.75	150,188
\$4,537.50	\$4,537.50	\$4,537.50	\$4,537.50	\$4,537.50	\$4,537.50	220,275
\$17,943.75	\$17,943.75	\$17,943.75	\$17,943.75	\$17,943.75	\$17,943.75	\$901,088
\$87,313	\$87,313	\$87,313	\$87,313	\$87,313	\$87,313	\$5,293,794
\$109,243	\$109,243	\$109,243	\$109,243	\$109,243	\$152,351	\$3,019,976
						\$1,745,092
						\$1,583,853
						\$1,435,845
						\$1,293,359
						\$1,164,153
\$4.23	\$4.23	\$4.23	\$4.23	\$4.23	\$4.23	\$5.29

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