OFF-SITE DOSE CALCULATION MANUAL
(ODCM)

SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION

Prepared by

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PREFACE

The South Texas Project Electric Generating Station (STPEGS) Off-site Dose Calculation Manual (ODCM) is divided into two parts: (1) the in-plant radiological effluent monitoring program requirements for liquid and gas sampling and analysis, along with the radiological environmental monitoring program requirements (PART A); and (2) approved methods to determine effluent monitor setpoint values and estimates of doses and radionuclide concentrations occurring beyond the boundaries of the station resulting from normal station operation (PART B).

The sampling and analysis programs in PART A provide the inputs for the models of PART B in order to calculate off-site doses and radionuclide concentrations necessary to determine compliance with the dose and concentration requirements of the Plant Technical Specification 3/4.11. The radiological environmental monitoring required by Technical Specification 3/4.12 and outlined within the manual provides the means to determine that measurable concentrations of radioactive materials released as a result of the operation of STPEGS are not significantly higher than expected.

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STPEGS ODCM

PART A

RADIOLOGICAL EFFLUENT MONITORING PROGRAMS

PART A

RADIOLOGICAL EFFLUENT MONITORING PROGRAMS

1.0 INTRODUCTION

The purpose of Part A of the ODCM (Off-Site Dose Calculation Manual) is to describe the sampling and analysis programs conducted by STPEGS which provide input to the models in Part B for calculating liquid and gaseous effluent concentrations, monitor setpoints, and off-site doses. The results of Part B calculations are used to determine compliance with the concentration and dose requirements of Technical Specification 3/4.11.

The minimum Radiological Environmental Monitoring Program required per Technical Specification 3/4.12 is described in Part A. The current sampling station locations as well as the details of the current sampling program implementation and philosophy appear in Part B. The information obtained from the Radiological Environmental Monitoring Program provides data which may allow evaluation of the relationship between quantities of radioactive materials released in effluents and resultant radiation doses to individuals from principal pathways of exposure. The data developed in the surveillance and monitoring programs described in Part A to the ODCM provide a means to confirm that measurable concentrations of radioactive materials released as a result of STPEGS operations are not significantly higher than expected based on the models in Part B.

2.0 RESPONSIBILITIES FOR PART A

All changes to Part A of the ODCM shall be reviewed and approved by the Plant Operations Review Committee (PORC) and the Nuclear Regulatory Commission prior to implementation.

It shall be the responsibility of the Plant Manager to ensure that the ODCM is used in the performance of the surveillance requirements and administrative controls of the appropriate portions of the Technical Specifications.

3.0 LIQUID EFFLUENT SAMPLING AND ANALYSIS PROGRAM

Radioactive liquid wastes shall be sampled and analyzed in accordance with the program specified in Table A3-1 for STPEGS. The results of the radioactive analysis shall be used as appropriate with the methodology of Part B of the ODCM to assure that the concentrations of liquid effluents in the cooling reservoir are maintained within the limits of Technical Specification 3.11.1.1.

Radioactive effluent information for liquids obtained from sampling and analysis programs shall also be used in conjunction with the methodologies in Part B to demonstrate compliance with the dose objectives and surveillance requirements of Technical Specification 3/4.11.1.2, and ?/4.11.1.3, and 3/4.11.4.

TABLE A3-1

RADIOACTIVE LIQUID WASTE SAMPLING AND ANALYSIS PROGRAM

LIQUID RELEASE TYPE	SAMPLING FREQUENCY	MINIMUM ANALYSIS FREQUENCY	TYPE OF ACTIVITY ANALYSIS	LOWER LIMIT OF DETECTION (LLD)(1) (uCi/ml)
1. Batch Waste Release Tanks(2)	P Each Batch	P Each Batch	Principal Gamma Emitters(3)	$5x10^{-7}$
			I-131	$1x10^{-6}$
a. Waste Monitor Tanks	P One Batch/M	M	Dissolved and Entrained Gases (Gamma Emitters)	$1x10^{-5}$
b. Laundry And Hot Shower Tank	P Each Batch	M Composite(4)	H-3	$1x10^{-5}$
			Gross Alpha	$1x10^{-7}$
c. Waste Evaporator Condensate Tanks	P Each Batch	Q Composite(4)	Sr-89, Sr-90	$5x10^{-8}$
			Fe-55	$1x10^{-6}$
d. Any other tanks which discharge liquid wastes past RT-8038				

TABLE A3-1

TABLE NOTATIONS

(1) The LLD is defined, for purposes of these specifications, as the smallest concentration of radioactive material in a sample that will yield a net count, above system background, that will be detected with 95% probability with only 5% probability of falsely concluding that a blank observation represents a "real" signal.

For a particular measurement system, which may include radiochemical separation:

$$LLD = \frac{4.66\ s_b}{E * V * 2.22 \times 10^6 * Y * \exp(-\lambda \Delta t)}$$

Where:

LLD = the "a priori" lower limit of detection (microCurie per unit mass or volume),

s_b = the standard deviation of the background counting rate or of the counting rate of a blank sample as appropriate (counts per minute),

E = the counting efficiency (counts per disintegration),

V = the sample size (units of mass or volume),

2.22×10^6 = the number of disintegrations per minute per microCurie,

Y = the fractional radiochemical yield, when applicable,

λ = the radioactive decay constant for the particular radionuclide (s^{-1}),

Δt = the elapsed time between the midpoint of sample collection and the time of counting (s).

Typical values of E, V, Y, and Δt should be used in the calculation.

It should be recognized that the LLD is defined as an a priori (before the fact) limit representing the capability of a measurement system and not as an a posteriori (after the fact) limit for a particular measurement.

(2) A batch release is the discharge of liquid wastes of a discrete volume. Prior to sampling for analyses, each batch shall be isolated, and then thoroughly mixed by methods described in p ant operating procedures to assure representative sampling.

TABLE A3-1

TABLE NOTATIONS (Continued)

(3) The principal gamma emitters for which the LLD specification applies include the following radionuclides: Mn-54, Fe-59, Co-58, Co-60, Zn-65, Mo-99, Cs-134, Cs-137, Ce-141, and Ce-144. This list does not mean that only these nuclides are to be considered. Other gamma peaks that are identifiable, together with those of the above nuclides, shall also be analyzed and reported in the Semiannual Radioactive Effluent Release Report pursuant to Specification 6.9.1.4 as outlined in Regulatory Guide 1.21, Appendix B, Revision 1, June 1974.

(4) A composite sample is one in which the quantity of liquid sampled is proportional to the quantity of liquid waste discharged and in which the method of sampling employed results in a specimen that is representative of the liquids released.

4.0 GASEOUS EFFLUENT SAMPLING AND ANALYSIS PROGRAM

Radioactive gaseous wastes shall be sampled and analyzed in accordance with the program specified in Table A4-1 for STPEGS. The results of the radioactive analyses shall be used as appropriate with the methodologies of Part B of the ODCM to assure that the dose rates due to radioactive materials released in gaseous effluents from the site to areas at and beyond the site boundary are within the limits of Technical Specification 3.11.2.1.

Radioactive effluent information for gaseous wastes obtained from sampling and analysis programs shall also be used in conjunction with the methodologies in Part B to demonstrate compliance with the dose objectives and surveillance requirements of Technical Specifications 3/4.11.2.1, 3/4.11.2.2, 3/4.11.2.3, 3/4.11.2.4, and 3/4.11.4.

TABLE A4-1

RADIOACTIVE GASEOUS WASTE SAMPLING AND ANALYSIS PROGRAM

GASEOUS RELEASE TYPE	SAMPLING FREQUENCY	MINIMUM ANALYSIS FREQUENCY	TYPE OF ACTIVITY ANALYSIS	LOWER LIMIT OF DETECTION (LLD)(1) (uCi/ml)
1. Unit Vent	M(3),(4)		Principal Gamma Emitters(2)	$1x10^{-4}$
	Grab Sample	M	H-3 (oxide)	$1x10^{-6}$
2. Condenser Air Removal System Discharge Header	M		Principal Gamma Emitters(2)	$1x10^{-4}$
	Grab Sample	M	H-3 (oxide)	$1x10^{-6}$
3. All Release Types as listed in 1. and 2. above	Continuous(6)	W(7) Charcoal Sample	I-131	$1x10^{-12}$
			I-133	$1x10^{-10}$
	Continuous(6)	W(7) Particulate Sample	Principal Gamma Emitters (2)	$1x10^{-11}$
	Continuous(6)	M Composite Particulate Sample	Gross Alpha	$1x10^{-11}$
	Continuous(6)	Q Composite Particulate Sample	Sr-89, Sr-90	$1x10^{-11}$

TABLE A4-1

TABLE NOTATIONS

(1) The LLD is defined, for purposes of these specifications, as the smallest concentration of radioactive material in a sample that will yield a net count, above system background, that will be detected with 95% probability with only 5% probability of falsely concluding that a blank observation represents a "real" signal.

For a particular measurement system, which may include radiochemical separation:

$$LLD = \frac{4.66\ s_b}{E * V * 2.22 \times 10^6 * Y * \exp(-\lambda \Delta t)}$$

Where:

LLD = the "a priori" lower limit of detection (microCurie per unit mass or volume),

s_b = the standard deviation of the background counting rate or of the counting rate of a blank sample as appropriate. (counts per minute),

E = the counting efficiency (counts per disintegration),

V = the sample size (units of mass or volume),

2.22×10^6 = the number of disintegrations per minute per microCurie,

Y = the fractional radiochemical yield, when applicable,

λ = the radioactive decay constant for the particular radionuclide (s^{-1}),

Δt = the elapsed time between the midpoint of sample collection and the time of counting (s).

Typical values of E, V, Y, and Δt should be used in the calculation.

It should be recognized that the LLD is defined as an a priori (before the fact) limit representing the capability of a measurement system and not as an a posteriori (after the fact) limit for a particular measurement.

TABLE A4-1

TABLE NOTATIONS (Continued)

(2) The principal gamma emitters for which the LLD specification applies include the following radionuclides: Kr-87, Kr-88, Xe-133, Xe-133m, Xe-135, and Xe-138 in noble gas releases and Mn-54, Fe-59, Co-58, Co-60, Zn-65, Mo-99, I-131, Cs-134, Cs-137, Ce-141, and Ce-144 in Iodine and particulate releases. This list does not mean that only these nuclides are to be considered. Other gamma peaks that are identifiable, together with those of the above nuclides, shall also be analyzed and reported in the Semiannual Radioactive Effluent release Report pursuant to Specification 6.9.1.4 as outlined in Regulatory Guide 1.21, Appendix B, Revision 1, June 1974.

(3) Sampling and analysis shall also be performed following shutdown, startup, or a THERMAL POWER change exceeding 15% of RATED THERMAL POWER within a 1-hour period.

(4) Tritium grab samples shall be taken at least once per 24 hours when the refueling canal is flooded.

(5) Not used.

(6) The ratio of the sample flow rate to the sampled stream flow rate shall be known for the time period covered by each dose or dose rate calculation made in accordance with Specifications 3.11.2.1, 3.11.2.2, and 3.11.2.3.

(7) Samples shall be changed at least once per 7 days and analyses shall be completed within 48 hours after changing, or after removal from sampler. Sampling shall also be performed at least once per 24 hours for at least 7 days following each shutdown, startup, or THERMAL POWER change exceeding 15% of RATED THERMAL POWER within a 1-hour period and analyses shall be completed within 48 hours of changing. When samples collected for 24 hours are analyzed, the corresponding LLDs may be increased by a factor of 10. This requirement does not apply if: (1) analysis shows that the DOSE EQUIVALENT I-131 concentration in the reactor coolant has not increased more than a factor of 3; and (2) the noble gas monitor shows that effluent activity has not increased more than a factor of 3.

5.0 RADIOLOGICAL ENVIRONMENTAL MONITORING

5.1 Sampling and Analysis Program

The Radiological Environmental Monitoring Program (REMP) provides representative measurements of radiation and radioactive materials in those exposure pathways and for those radionuclides that lead to the highest potential radiation exposure of members of the public resulting from station operation. This monitoring program is required by Technical Specification 3.12.1. The monitoring program implements Section IV.B.2 of Appendix I to 10CFR Part 50, and thereby supplements the radiological effluent monitoring program by verifying that the measurable concentrations of radioactive materials and levels of radiation are not higher than expected on the basis of effluent measurements and the modeling of the environmental exposure pathways which have been incorporated into Part B of the ODCM.

The monitoring program as specified at fuel load shall remain in effect for at least the first three years of commercial operation. Following this period, program changes may be initiated based on operational experience.

In accordance with Technical Specification Surveillance Requirement 4.12.1 a sampling and analyses program shall be conducted. The implemented Radiological Environmental Monitoring Program as described in Part B to Section 5 of the ODCM shall as a minimum satisfy the requirements of Table A5-1. Detection capability requirements, and reporting levels for radioactivity concentrations in environmental samples are shown on Tables A5-2 and A5-3, respectively.

5.2 Land Use Census

As part of the Radiological Environmental Monitoring Program, Technical Specification 3/4.12.2 requires that a land use census be conducted annually during the growing season to identify within a distance of 8 km (5 miles) the location in each of the 16 meteorological sectors of the nearest milk animal, the nearest residence, and the nearest garden of greater than 50 m^2 (500 ft^2) producing broadleaf vegetation.

The land use census ensures that changes in the use of area beyond the site boundary are identified, and appropriate modifications to the monitoring program and dose assessment models are made, if necessary. This census satisfies the requirements of Section IV.B.3 of Appendix I to 10CFR Part 50.

For the purpose of conducting the land use census as required by Technical Specification Surveillance Requirement 4.12.2, station personnel should determine what survey methods will provide the necessary results considering the type of information to be collected and its use. For example land use census results shall be obtained by using a survey method, or combination of methods, which may include, but are not limited to, door-to-door surveys (i.e., roadside identification of locations), aerial surveys, or by consulting local agricultural authorities.

Technical Specification 3.12.2.b requires that new locations identified from the census that yield a calculated dose or dose commitment 20 percent greater than at a location from which samples are currently being obtained be added within 30 days to the REMP. These new locations shall be added to the sampling program only if reliable sampling of the affected pathway(s) can be devised.

TABLE A5-1

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

EXPOSURE PATHWAY AND/OR SAMPLE	NUMBER OF REPRESENTATIVE SAMPLES AND SAMPLE LOCATIONS(1)	SAMPLING AND COLLECTION FREQUENCY	TYPE AND FREQUENCY OF ANALYSIS
1. Direct Radiation(2)	Forty routine monitoring stations either with two or more dosimeters or with one instrument for measuring and recording dose rate continuously, placed as follows: An inner ring of stations, one in each meteorological sector in the general area of the SITE BOUNDARY, An outer ring of stations, one in each meteorological sector in the 6- to 8-km range from the site, and The balance of the stations to be placed in special interest areas such as population centers, nearby residences, schools, and in one or two areas to serve as control stations.	Quarterly.	Gamma dose quarterly.

TABLE A5-1 (Continued)

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

EXPOSURE PATHWAY AND/OR SAMPLE	NUMBER OF REPRESENTATIVE SAMPLES AND SAMPLE LOCATIONS[1]	SAMPLING AND COLLECTION FREQUENCY	TYPE AND FREQUENCY OF ANALYSIS
2. Airborne			
Radioiodine and Particulates	Samples from five locations: Three samples from close to the three SITE BOUNDARY locations, of the highest calculated annual average ground-level D/Q: One sample from the vicinity of a community having the highest calculated annual average ground-level D/Q; and One sample from a control location, as for example 15 to 30 km distant and in a minimal wind direction.	Continuous sampler operations with sample collection weekly, or more frequently if required by dust loading.	Radioiodine Canister: I-131 analysis weekly. Particulate Sampler: Gross Beta radioactivity analysis following filter change;[3] and gamma isotopic analysis of composite (by location) quarterly.
3. Waterborne			
a. Surface[5]	One sample from the Colorado River upstream of blowdown. One sample downstream of blowdown.	Monthly composite sample[6] [6] If available - grab sample otherwise.	Gamma isotopic analysis[4] monthly. Composite for tritium analysis quarterly.
b. Ground	Samples from one or two sources only if likely to be affected[7].	Quarterly grab sample.	Gamma isotopic[4] and tritium analysis quarterly.

TABLE A5-1 (Continued)

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

EXPOSURE PATHWAY AND/OR SAMPLE	NUMBER OF REPRESENTATIVE SAMPLES AND SAMPLE LOCATIONS[1]	SAMPLING AND COLLECTION FREQUENCY	TYPE AND FREQUENCY OF ANALYSIS
3. Waterborne (Cont.)			
c. Drinking	One sample of each of one to three of the nearest water supplies that could be affected by its discharge. One sample from a control location.	Monthly grab sample.	Gamma isotopic analyses[4] monthly.
d. Sediment From Shoreline	One sample from downstream area with existing or potential recreational value.	Semiannually	Gamma isotopic analysis[4] semiannually.
4. Ingestion			
a. Milk	Samples from milk animals in up to three locations within a distance 8 km shall be taken if they are available. One control sample may be taken at a distance of at least 15 km at times that routine sampling is performed.	Semimonthly when on pasture, monthly at other times when available.	Gamma isotopic[4] and I-131 analysis semimonthly when animals are on pasture; monthly at other times.

TABLE A5-1 (Continued)

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

EXPOSURE PATHWAY AND/OR SAMPLE	NUMBER OF REPRESENTATIVE SAMPLES AND SAMPLE LOCATIONS(1)	SAMPLING AND COLLECTION FREQUENCY	TYPE AND FREQUENCY OF ANALYSIS
4. Ingestion (Cont.)			
b. Fish and Invertebrates	One sample representing commercially or recreationally important species in vicinity of plant discharge area.	Sample in season, or semiannually if they are not seasonal.	Gamma isotopic analysis(4) on edible portions.
	One sample of a representative species in areas not influenced by plant discharge.		
c. Food Products	One sample of each principal class of food products from any area that is irrigated by water in which liquid plant wastes have been discharged.	At time of harvest(8).	Gamma isotopic analyses(4) on edible portion.
	Three samples of broadleaf vegetation grown nearest offsite locations of highest calculated annual average ground level D/Q if milk sampling is not performed.	Monthly (when available).	Gamma Isotopic(4).
	One sample each of the similar leaf vegetation grown 15 to 30 km distant in a minimal wind direction if milk sampling is not performed.	Monthly during growing season (when available).	Gamma isotopic(4)

TABLE A5-1

TABLE NOTATIONS

(1) Specific parameters of distance and direction sector from the center line of one reactor, and additional description where pertinent, shall be provided for each and every sample location in Table B5-3 in a table and figure(s) in the ODCM. Refer to NUREG-0133, "Preparation of Radiological Effluent Technical Specifications For Nuclear Power Plants," October 1978. and to Radiological Assessment Branch Technical Position, Revision 1, November 1979. Deviations are permitted from the required sampling schedule if specimens are unobtainable due to circumstances such as hazardous conditions, seasonal unavailability, and malfunction of automatic sampling equipment. If specimens are unobtainable due to sampling equipment malfunction, effort shall be made to complete corrective action prior to the end of the next sampling period. All deviations from the sampling schedule shall be documented in the Annual Radiological Environmental Operating Report pursuant to specification 6.9.1.3. It is recognized that, at times, it may not be possible or practicable to continue to obtain samples of the media of choice at the most desired location or time. In these instances suitable alternative media and locations may be chosen for the particular pathway in question and appropriate substitutions made within 30 days in the Radiological Environmental Monitoring Program. In lieu of any License Event Report required by Specification 6.6.1 and pursuant to Specification 6.9.1.4 identify the cause of the unavailability of samples for that pathway and identify the new location(s) for obtaining replacement samples in the next Semiannual Radioactive Effluent Release Report and also include in the report a revised figure(s) and table for the ODCM reflecting the new location(s).

(2) One or more instruments, such as a pressurized ion chamber, for measuring and recording dose rate continuously may be used in place of, or in addition to, integrating dosimeters. For the purposes of this table, a thermoluminescent dosimeter (TLD) is considered to be one phosphor; two or more phosphors in a packet are considered as two or more dosimeters. Film badges shall not be used as dosimeters for measuring direct radiation. The 40 stations is not an absolute number. The number of direct monitoring stations may be reduced according to geographical limitations. TLD's may be located at nonprescribed distances from the plant due to access limitations.

(3) Airborne particulate sample filters shall be analyzed for gross beta radioactivity 24 hours or more after sampling to allow for radon and thoron daughter decay. If gross beta activity in air particulate samples is greater than 10 times the yearly mean of control samples, gamma isotopic analysis shall be performed on the individual samples.

TABLE A5-1

TABLE NOTATIONS (Continued)

(4) Gamma isotopic analysis means the identification and quantification of gamma-emitting radionuclides that may be attributable to the effluents from the facility.

(5) The "upstream sample" shall be taken at a distance beyond significant influence of the discharge. The "downstream" sample shall be taken in an area beyond but near the mixing zone. "Upstream" samples in an estuary must be taken far enough upstream to be beyond the plant influence. Salt water shall be sampled only when the receiving water is utilized for recreational activities.

(6) A composite sample is one in which the quantity (aliquot) of liquid sampled is proportional to the quantity of flowing liquid and in which the method of sampling employed results in a specimen that is representative of the liquid flow. In this program composite sample aliquots shall be collected at time intervals that are very short (e.g., hourly) relative to the compositing period (e.g., monthly) in order to assure obtaining a representative sample.

(7) Ground water samples shall be taken when this source is tapped for drinking or irrigation purposes in areas where the hydraulic gradient or recharge properties are suitable for contamination.

(8) If harvest occurs more than once a year, sampling shall be performed during each discrete harvest. If harvest occurs continually, sampling shall be monthly. Attention shall be paid to including samples of tuberous and root food products.

TABLE A5-2

DETECTION CAPABILITIES FOR ENVIRONMENTAL SAMPLE ANALYSIS[1] [2]

LOWER LIMIT OF DETECTION[3]

ANALYSIS	WATER (pCi/1)	AIRBORNE PARTICULATE OR GASES (pCi/m^3)	FISH (pCi/kg, wet)	MILK (pCi/1)	FOOD PRODUCTS (pCi/kg, wet)	SEDIMENT (pCi/kg, dry)
Gross Beta	4	0.01				
H-3	3000					
Mn-54	15		130			
Fe-59	30		260			
Co-58,60	15		130			
Zn-65	30		260			
Zr-Nb-95	15					
I-131	1[4]	0.07		1	60	
Cs-134	15	0.05	130	15	60	150
Cs-137	18	0.06	150	18	60	180
Ba-La-140	15			15		

TABLE A5-2

TABLE NOTATIONS

(1) This list does not mean that only these nuclides are to be considered. Other peaks that are identifiable, together with those of the above nuclides, shall also be analyzed and reported in the Annual Radiological Environmental Operating Report pursuant to Specification 6.9.1.3.

(2) Required detection capabilities for thermoluminescent dosimeters used for environmental measurements shall be in accordance with the recommendations of Regulatory Guide 4.13.

(3) The LLD is defined, for purposes of these specifications, as the smallest concentration of radioactive material in a sample that will yield a net count, above system background, that will be detected with 95% probability with only 5% probability of falsely concluding that a blank observation represents a "real" signal.

For a particular measurement system, which may include radiochemical separation:

$$LLD = \frac{4.66\ s_b}{E * V * 2.22 * Y * \exp(-\lambda \Delta t)}$$

Where:

LLD = the "a priori" lower limit of detection (picoCuries per unit mass or volume),

s_b = the standard deviation of the background counting rate or of the counting rate of a blank sample as appropriate (counts per minute),

E = the counting efficiency (counts per disintegration),

V = the sample size ;(units of mass or volume),

2.22 = the number of disintegrations per minute per picoCurie,

Y = the fractional radiochemical yield, when applicable,

λ = the radioactive decay constant for the particular radionuclide (s^{-1})

Δt = the elapsed time between environmental collection, or end of the sample collection period, and time of counting(s).

Typical values of E, V, Y, and Δt should be used in the calculation.

TABLE A5-2

TABLE NOTATIONS (Continued)

It should be recognized that the LLD is defined as an a priori (before the fact) limit representing the capability of a measurement system and not as an a posteriori (after the fact) limit for a particular measurement. Analyses shall be performed in such a manner that the stated LLDs will be achieved under routine conditions. Occasionally background fluctuations, unavoidable small sample sizes, the presence of interfering nuclides, or other uncontrollable circumstances may render these LLDs unachievable. In such cases, the contributing factors shall be identified and described in the Annual Radiological Environmental Operating Report pursuant to Specification 6.9.1.3.

(4) LLD for drinking water samples. If no drinking water pathway exists, the LLD of gamma isotopic analysis may be used.

TABLE A5-3

REPORTING LEVELS FOR RADIOACTIVITY CONCENTRATIONS IN ENVIRONMENTAL SAMPLES

ANALYSIS	REPORTING LEVELS					
	WATER (pCi/l)	AIRBORNE PARTICULATE OR GASES (pCi/m^3)	FISH (pCi/kg, wet)	MILK (pCi/l)	FOOD PRODUCTS (pCi/kg, wet)	SEDIMENT (pCi/kg, dry)
H-3	30,000					
Mn-54	1,000		30,000			
Fe-59	400		10,000			
Co-58	1,000		30,000			
Co-60	300		10,000			
Zn-65	300		20,000			
Zr-Nb-95	400					
I-131	2	0.9		3	100	
Cs-134	30	10	1,000	60	1,000	
Cs-137	50	20	2,000	70	2,000	
Ba-La-140	200			300		

STPEGS ODCM

PART B

RADIOLOGICAL CALCULATIONAL METHODS AND PARAMETERS

PART B

RADIOLOGICAL CALCULATIONAL METHODS AND PARAMETERS

1.0 Introduction

1.1 Purpose

Part B of the Off-site Dose Calculation Manual (ODCM) provides the methods and parameters used to calculate off-site doses due to routine radioactive liquid and gaseous effluent releases. This ODCM is a supporting document to the Radiological Effluent Technical Specifications (RETS) for the South Texas Project Electric Generating Station (STPEGS) and meets the following identified needs:

a. Section 3.1 of the ODCM describes the methods approved for setting alarm points on liquid monitors to assure that the concentrations of radioactive liquid effluents released to the UNRESTRICTED AREA are limited to the concentration limits of 10CFR20, Appendix B, Table II;

b. Section 3.3 of the ODCM describes the methods approved for setting alarm points on gaseous monitors to assure that the concentrations of radioactive noble gas effluents released to the UNRESTRICTED AREA are limited to the concentration limits of 10CFR20, Appendix B, Table II;

c. Sections 4.1 to 4.4 of the ODCM describe the methods approved for calculating doses and dose rates to the maximum exposed MEMBER OF THE PUBLIC in the UNRESTRICTED AREA for comparison with the limits of the Technical Specifications;

d. Section 4.5 of the ODCM describes the methods approved for calculating the total dose from the uranium fuel cycle to the maximum exposed MEMBER OF THE PUBLIC for comparison with the limits of 40CFR190;

e. Section 4.6 of the ODCM describes the method approved for calculating doses to MEMBERS OF THE PUBLIC who may visit STPEGS or travel within the site boundary;

f. Section 5.0 of the ODCM describes the Radiological Environmental Monitoring Program (REMP) including the minimum sampling program and sample locations.

This ODCM is consistent with "Preparation of Radiological Effluent Technical Specifications for Nuclear Power Plants (NUREG-0133)"; "Calculation of Annual Doses to Man From Routine Releases of Reactor Effluents for the Purpose of Evaluating Compliance With 10CFR50, Appendix I (Regulatory Guide 1.109)"; and the radiation monitoring system with its offsite dose calculation software installed at STPEGS.

This ODCM was prepared to reflect the actual equations used to meet the regulatory requirements and hence changes to this document are anticipated. Substantive changes to the methods contained in this document are reviewed and approved by the Plant Operations Review Committee (PORC) as required by Technical Specification 6.14 and revisions are forwarded to the NRC with the Semiannual Radioactive Effluent Release Report. However, the general methods presented should accommodate operational flexibility without frequent or major changes to this manual.

1.2 General Site Description

The South Texas Project Electric Generating Station (STPEGS) consists of two pressurized water reactor units situated on a 19 square mile site. The units are similar in design and are planned to operate independently with a minimum of shared systems. Each unit has its own liquid radioactive waste treatment system and its own ventilation system. Each unit consists of a reactor containment building, an attached fuel-handling and storage building, an attached mechanical electrical auxiliary building, and a detached turbine-generator building.

The most notable common system is the cooling reservoir into which liquid radioactive effluents are discharged from both units. Also, the systems which monitor radioactive releases for each unit report their results to a common computer for the purposes of report generation and off-site dose calculation.

The site is relatively remote with the nearest resident over two miles from either unit and with the nearest community about four miles distant. The closest site boundary is nearly a mile from either unit.

The terrain is coastal plain with farm land and range predominating. The land rises slowly from sea level 10 miles south of the plant to an elevation of 45 feet about 10 miles to the north. The only topographical relief consists of plant associated structures and shallow gullies. The methods discussed in this document for calculating off-site doses due to atmospheric releases were evaluated against this relatively simple terrain.

Dose calculations for liquid effluent releases include considerations for dilution and radioactive decay in the large cooling reservoir into which releases from both units are made. These dose estimates are based on off-site discharges from the reservoir to the Colorado River and the Little Robbins Slough area as a consequence of initial radioactive effluent releases into the reservoir.

2.0 Summary of Release Points and Detector System

2.1 Gaseous Release Points (Reference 7, FSAR Section 11.3)

The sources of gaseous releases for each unit at STPEGS are:

1) Reactor Containment Building (RCB);
2) Mechanical-Electrical Auxiliary Building (MEAB);
3) Fuel-Handling Building (FHB);
4) Gaseous Waste Processing System (GWPS);
5) Turbine-Generator Building (TGB).

Only the first four sources contribute significantly to routine plant atmospheric releases. The effluents from the first four sources are routed to a common exhaust pipe located on the roof of each unit's MEAB. The effluent is monitored by three radiation detectors (noble gas, particulate, and iodine; monitor #RT-8010) and then exhausted horizontally at an elevation of 29 meters and at a flow rate of 8370 cubic meters per minute. Figure B2-1 summarizes the system installed at each unit.

Radioactive gaseous effluents from each TGB originate primarily in the condenser vacuum pumps. The exhaust from these pumps is monitored by noble gas detectors (monitor #RT-8027). These systems are exhausted onto the northwest area of each TGB roof with a flow rate of about 2 cubic meters per minute. Figure B2-2 summarizes these systems.

Occasionally other atmospheric release points may be important, such as the main steam line atmospheric dumps and the gland steam condenser vents. If releases occur due to unusual operating circumstances, an estimate is made of any unmonitored effluent releases prior to off-site dose calculation. These release estimates are based on the mass of secondary coolant lost and the nuclide concentrations in the secondary coolant.

2.2 Liquid Release Points (Reference 7, FSAR Section 11.2)

The sources of liquid radioactive releases consist of equipment leaks and drains, valve leak offs, pump seal leak offs, floor drains, etc. from systems containing reactor coolant in the RCB and MEAB plus liquid effluents from processes such as the laundry, hot showers, condensate polishing systems, boron recycle systems, etc.

Some of these systems are monitored for control of plant processes, and all the radioactive liquid waste is eventually routed to the liquid radwaste processing system of each unit for treatment and release. Releases are by batch from each unit and are monitored prior to entering the Circulating Water System via the Open Loop Auxiliary Cooling Water System and hence the reservoir. The radioactive effluent released from each unit's liquid radwaste processing system

is continuously monitored using a scintillation detector (monitor #RT-8038) mounted off-line from the discharge pipe.

Potentially contaminated liquid effluents from floor drains and the condensate polishing regeneration waste collection system in each TGB could also be a source of radioactive waste. The floor drain system effluents of each TGB are monitored continuously as are the condensate polishing system effluents.

Provided no activity is detected in the floor drain system effluents, they are combined with oily waste effluents and are discharged directly into the reservoir. The condensate polishing regeneration system normally discharges into a neutralization basin. If activity is measured during routine sampling of the Total Dissolved Solids Tank or if the system's in-line monitor detects activity in the regenerate waste effluent, the flow to the neutralization basin is isolated. Flow would be diverted to the liquid radwaste processing system of the appropriate unit.

Liquid radioactive releases from either unit leave STPEGS from the reservoir to the Colorado River, the West Branch of the Colorado, or to the Little Robbins Slough area. Under normal circumstances all radioactive liquid effluents are treated and diluted into the 150,000 acre-foot (average fill height) reservoir prior to release from the site. From time to time planned releases are made to the Colorado River through the blowdown facilities provided. However, some releases are uncontrollable such as flow from the hydraulic relief wells surrounding the reservoir or flow over the spillway following unusually heavy rains.

Because of the large capacity of the reservoir, the radionuclide concentrations in these releases (planned or unplanned) are expected to be a small fraction of the concentration limits listed in the Technical Specifications. The nuclide concentrations in waters released from the reservoir are estimated based on releases to the reservoir and radioactive decay. A routine monitoring program for the reservoir and relief well discharges is used as the basis for confirming estimates of radionuclide concentrations released to the off-site environment.

2.3 Detector System and Instrument Responses

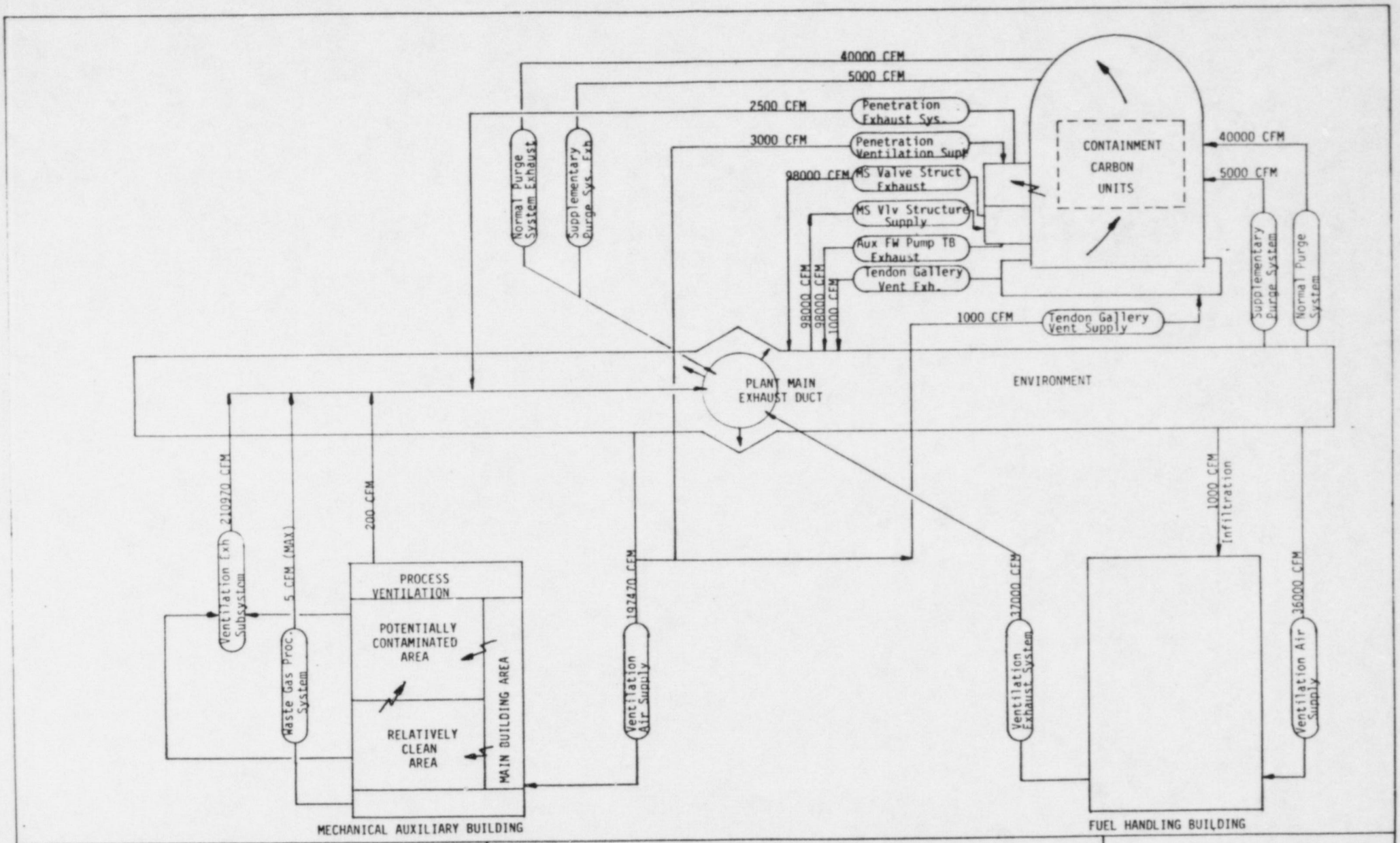
Three types of detectors are used in association with effluent monitors. All are sensitive to gamma rays; however, some are primarily sensitive to beta radiations. Those sensitive primarily to beta include the air particulate and noble gas detectors. Those sensitive primarily to gamma include the iodine air channel detectors and the liquid release monitors.

The noble gas (normal range) detectors consist of plastic scintillators which respond primarily to beta particles. The response of these detectors is a function of beta energy as can be seen from Figure B2-3. These detectors are calibrated in uCi/ml for gases with beta emission spectra similar to that of Cl-36.

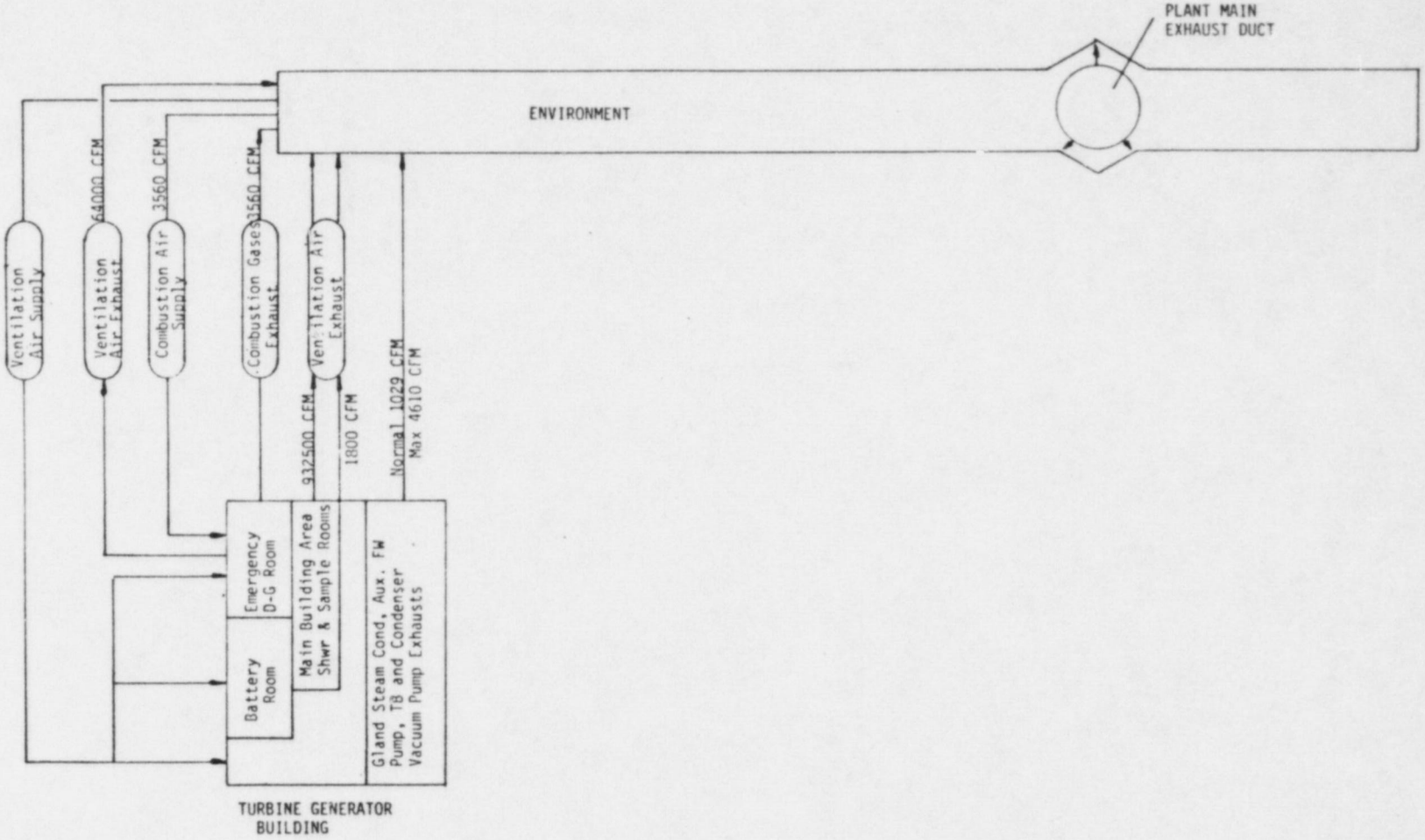
The air particulate detectors also consist of plastic scintillators which respond primarily to beta decay from particulates deposited on a filter paper. These detectors are calibrated in uCi/ml relative to Cl-36 betas with an overall response similar to that shown in Figure B2-4.

The iodine air channel detectors are NaI(Tl) scintillators in conjunction with a single channel analyzer adjusted to monitor the 364 KeV gamma of I-131. Although sensitive to all gammas, the iodine detector is sized and the single channel analyzer is adjusted to minimize response to interfering radiation. The detectors are calibrated in uCi/ml of I-131 based on a Ba-133 calibration source.

The liquid effluent detectors are NaI(Tl) scintillators which are sized (1.5 by 1 inch) to be sensitive to a broad range of gamma emitters. These detectors are calibrated in uCi/ml relative to Cs-137 but have general gamma detection ability similar to that shown in Figure B2-5.



UNIT VENTILATION SYSTEMS | SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION | Figure B2-1



TURBINE BUIDLING VENTILATION SYSTEM | SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION | Figure B2-2

Figure B2-3 Energy Response Curve for the RD-52 Offline Beta Detector Operating at 760 mm Hg and 25° C (Assuming one beta per disintegration)

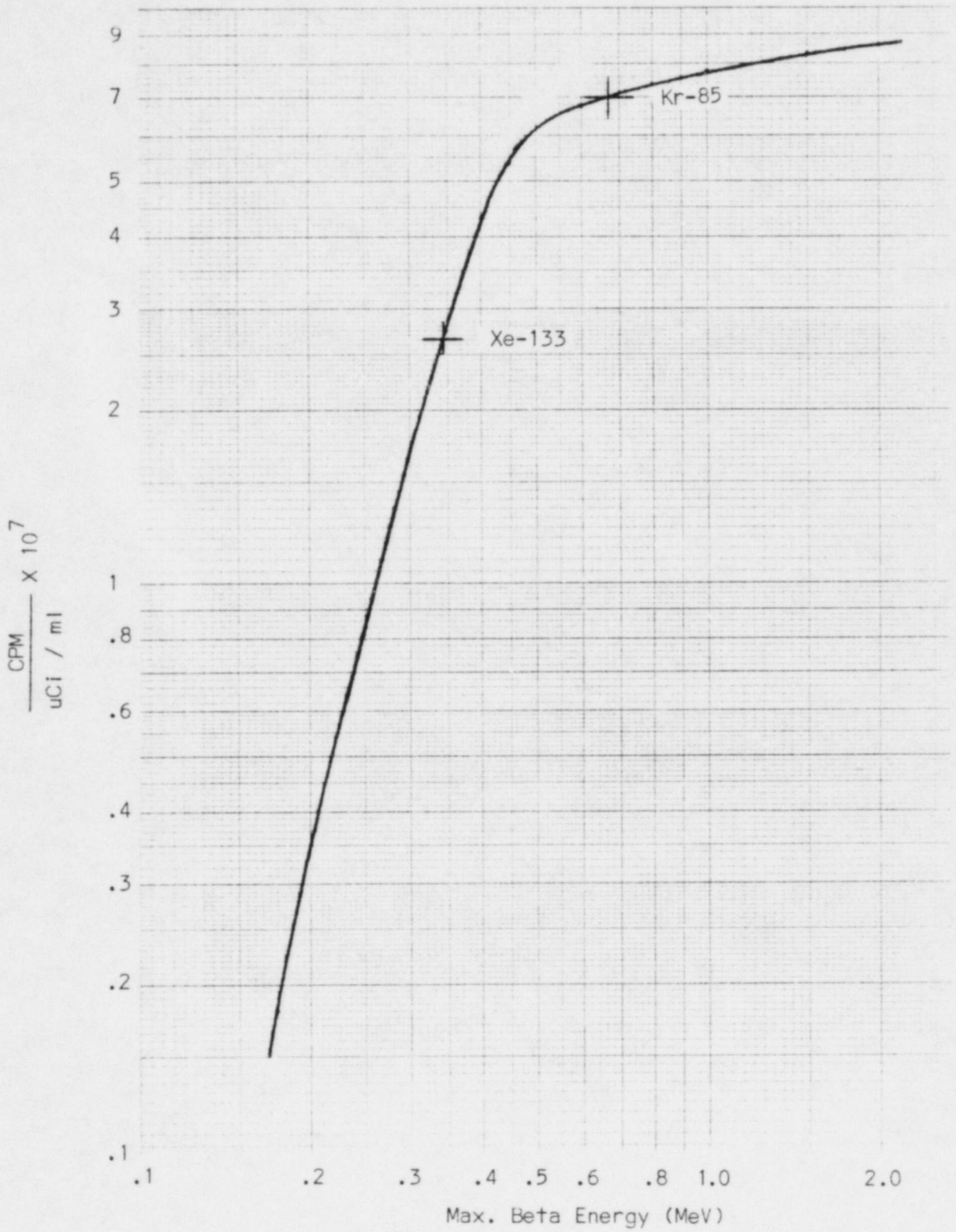
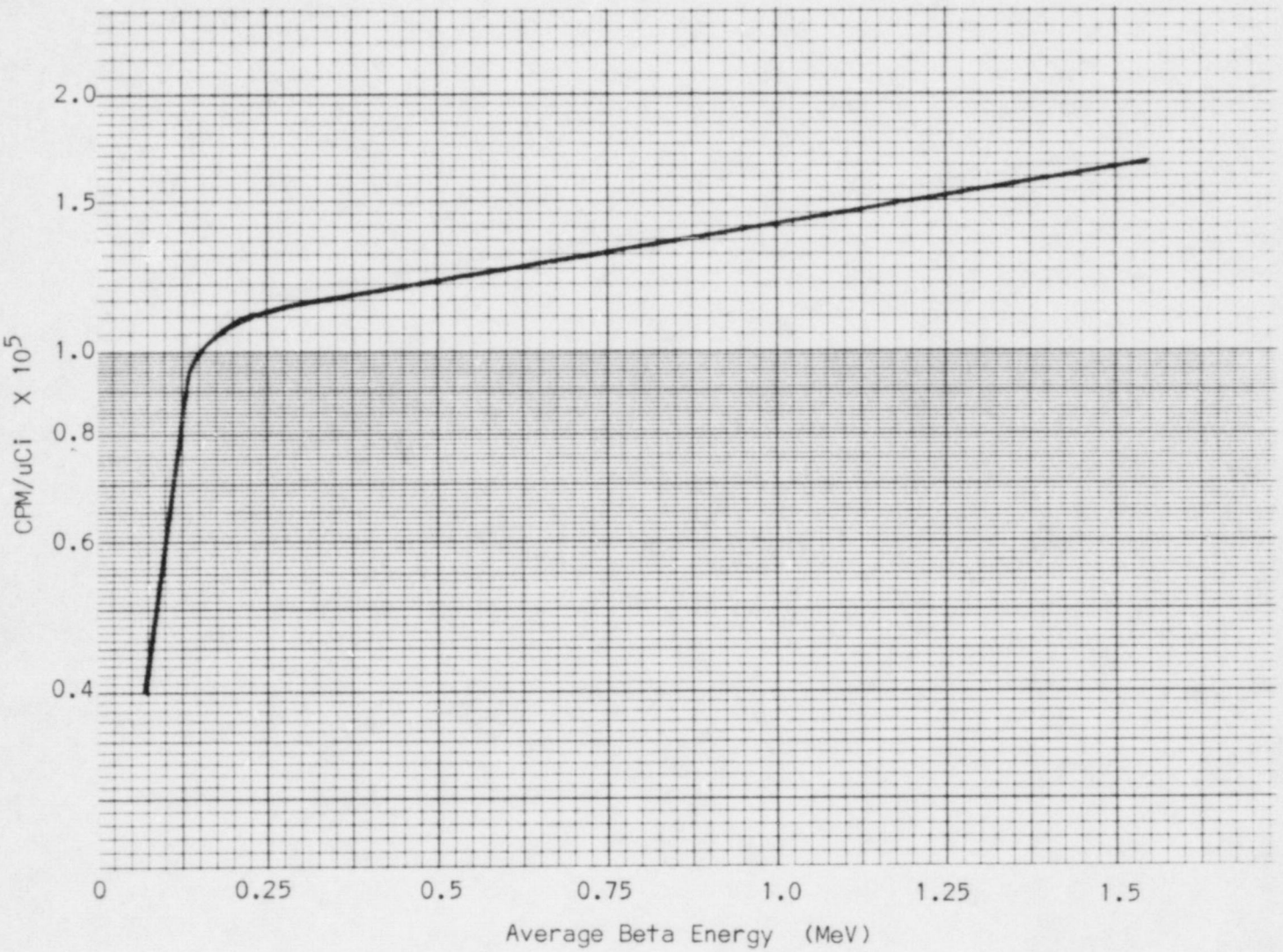
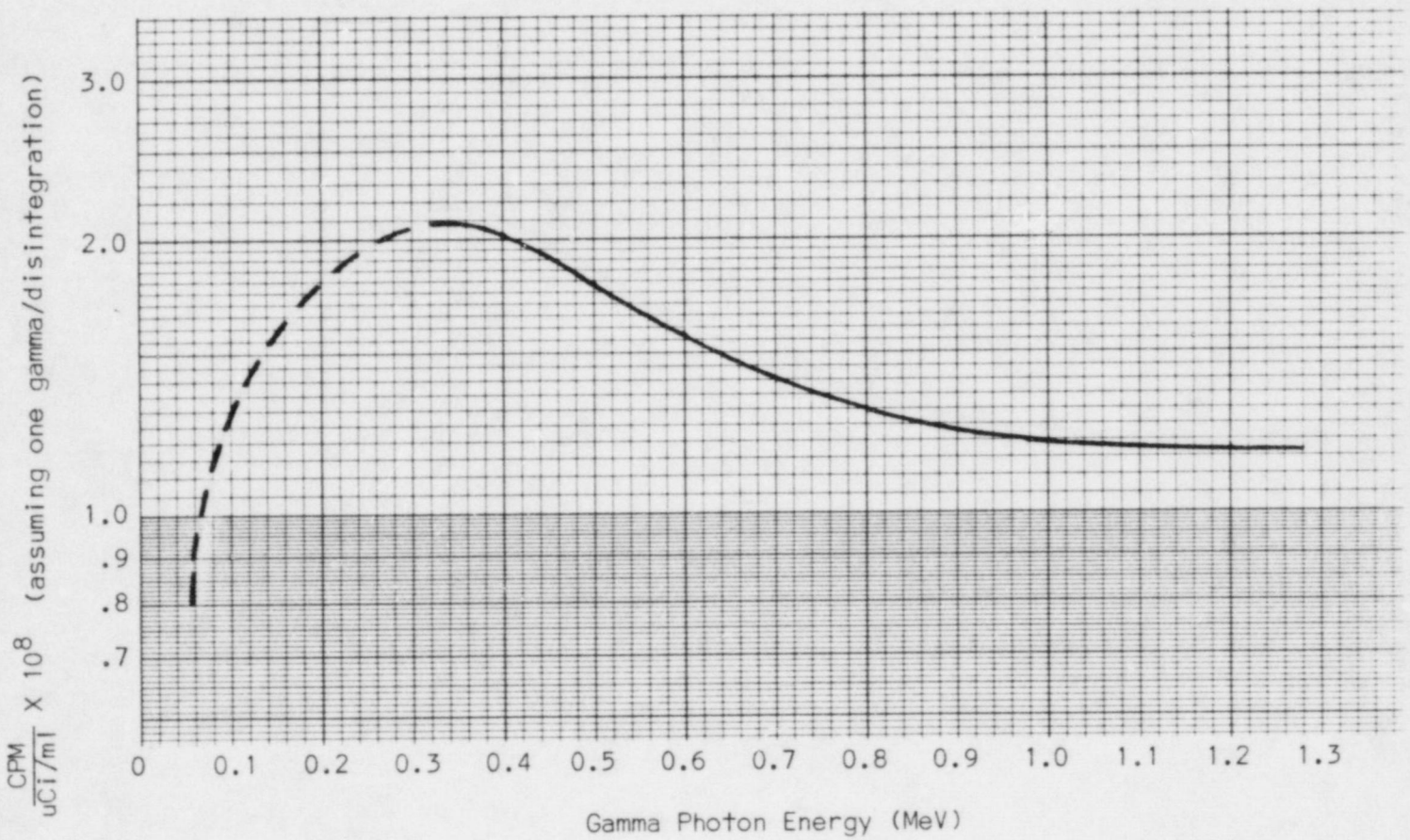


Figure B2-4 RD-56 Particulate Detector Energy Response to Betas
(assuming one beta per disintegration)



(Copied from G. A. Technologies report EL-3296.)

Figure B2-5 Detector Energy Response to Gamma Radiations For The RD-52 Offline Gamma Detector



(Copied from G. A. Technologies report EL-3509.)

3.0 Alarm Setpoint Adjustments

3.1 Liquid Effluents

3.1.1 NRC Regulatory Requirements

NRC regulatory requirements for radioactive liquid effluents, Specification 3/4.11.1.1 of the Radiological Effluent Technical Specifications, require that the concentration of radioactive material released at any time from the South Texas Project Electric Generating Station (STPEGS) to unrestricted areas be limited to the Maximum Permissible Concentrations (MPCs) in water. The MPCs are as indicated in 10CFR20, Appendix B, Table II, column 2 for nuclides other than dissolved or entrained noble gases. Noble gas concentrations must be limited to 2.0E-04 uCi/ml.

3.1.2 Interpretation

Liquid effluent releases from STPEGS are diluted by a 7000 acre reservoir. Plant releases are all routed into the cooling reservoir where substantial dilution and radioactive decay may occur before ultimate release from the site. The reservoir lies totally within the confines of the site and the use of its water is restricted to plant operation. No recreation, including hunting and fishing, is permitted on the reservoir. Liquid effluents diluted into the cooling reservoir may be released during:

a) scheduled blowdown operations to the Colorado River,
b) passive hydraulic relief well flow,
c) dilution into the shallow ground water aquifer, or
d) passive spillway releases following unusually heavy rains.

The blowdown releases will be planned; however, the other releases are not controlled by the operations staff. To assure that the provisions of Technical Specification 3/3.11.1.1 are satisfied, the concentrations of radionuclides in the reservoir shall be maintained at levels less than the release limits of 10CFR20, Appendix B, Table II, Column 2.

3.1.3 Implementation

Concentrations of radionuclides in the cooling reservoir will be controlled such that the sum of the ratios of the MPCs, MPC_{eff}, remains less than unity as indicated in Equation 3.1 below:

$$MPC_{eff} = \frac{C1}{MPC1} + \frac{C2}{MPC2} + \ldots + \frac{C_i}{MPC_i} < 1 \quad \text{Eq. 3.1}$$

where $C1, C2, \ldots, C_i$ are the measured nuclide concentrations of a representative sample of effluent (uCi/ml);

MPC1, MPC2,..., MPC_i are the associated maximum permissible concentrations of those nuclides which contribute at least 90% to the total dose.

Consequently any releases from the reservoir to the offsite environment will meet the requirements of Technical Specification 3/4.11.1.1.

In order to assure that the concentration of radionuclides in the reservoir never exceeds an effective concentration of one MPC, the dilution afforded by the circulating coolant and auxiliary cooling water flows must be estimated. The dilution of liquid radioactive waste discharges into the circulating coolant from each unit is calculated as indicated below:

$$A = [Fr * Ar + Fc * Ac] / [Fc + Fr] \qquad \text{Eq. 3.2}$$

where:

Fr = flow rate of radioactive waste as determined by the rated pump capacity of the radioactive waste discharge, gal/min;
Fc = flow rate of circulating coolant and the open loop auxiliary cooling water, normally 9E5 gal/min (9E5 is 1/2 the normal circulating coolant flow of each unit since liquid radioactive waste is discharged into only one of two 138" lines). Fc may be determined by multiplying the number of circulating coolant pumps operating by the rated pump capacity;
Ar = fraction of MPC in radioactive waste flow as measured in the waste monitor tank, unitless factor;
Ac = fraction of MPC in circulating water before addition of the radioacative waste stream as measured monthly for the reservoir, unitless factor;
A = fraction of an MPC in the circulating water as it reenters the reservoir; $A < 1.0$.

The very large dilution factors afforded by the circulating coolant will not be routinely used to allow high concentrations of liquid radioactive waste to be discharged from the plant. Under no circumstances will activity be discharged to the reservoir such that the effective MPC of the diluted waste stream exceeds one as described by Eq. 3.2.

In order to calculate the alarm/trip point for these monitors, one of two calculational methods may be chosen. The easiest method is to assume that all the activity present is due to the most prevalent nuclide in the waste stream to which the detector is sensitive. The setpoint may then be calculated from the calibration curve for the concentration limit cited above in 10CFR20. Table B3-1 contains a listing of such alarm points for nuclides identified in the FSAR, based upon the calibration curve in Figure B2-5.

If no single nuclide predominates in the waste stream, then a more accurate method for setting the liquid monitor alarm/trip levels is necessary to account for all the nuclides present and their relative concentrations as nominally measured prior to release. The alarm/trip level can be estimated from these relative concentrations and the calibration curve of Figure B2-5 for an effective concentration of one MPC in water.

The first step toward setting the alarm point by this alternate method is to measure the actual nuclide concentrations in the effluent (liquid or gaseous releases). Next the fraction of an MPC to which this concentration corresponds must be estimated using Equation 3.1 as below:

$$MPC_{eff} = \frac{C1}{MPC1} + \frac{C2}{MPC2} + \ldots + \frac{C_i}{MPC_i} \qquad \text{Eq. 3.3}$$

Next the response of the detector to the nuclides must be estimated as indicated below:

$$\text{response} = E1 * C1 + E2 * C2 + \ldots + Ei * C_i \qquad \text{Eq. 3.4}$$

where $C1, C2, \ldots, C_i$ are the measured nuclide concentrations (uCi/ml) for each nuclide,
$E1, E2, \ldots, Ei$ are the detector responses for each of the "i" nuclides (cpm per uCi/ml)as in Table B3-3.

The instrument response to the nuclide mix in either cpm or uCi/ml (Cs-137 equivalent) may be estimated by multiplying the appropriate value, Ei, from Table B3-3 by each of the corresponding radionuclide concentrations, C_i, and then summing the results over all the nuclides, i (i.e. use Equation 3.4)

In order to estimate the instrument response to a one MPC effective concentration, the calculated instrument response must be divided by the effective MPC factor calculated in Equation 3.1 above.

The values in Table B3-3 were estimated using gamma emission spectra and the response of the RD-53 detector as follows:

First the detector efficiency was estimated for the nuclide as:

$$E = \frac{\text{detected cpm}}{\text{uCi/ml of nuclide}} = Ef1 * n1 + Ef2 * n2 + \ldots + Efi * ni \qquad \text{Eq. 3.5}$$

where $Ef1$ = the gamma 1 detection efficiency (cpm/uCi/ml) as described in the appropriate calibration curve,

$n1$ = the frequency of gamma 1 emission per decay of the nuclide,

$E = \frac{\text{detected cpm}}{\text{uCi/ml of nuclide}}$ = the response of the detector to the given nuclide.

The relative efficiency factor, Re, then may be calculated from this efficiency (Equation 3.5 above) as follows:

$$Re = E \; / \; \frac{\text{cpm of reference nuclide}}{\text{uCi/ml of reference nuclide}} \qquad \text{Eq. 3.6}$$

where $\frac{\text{cpm of reference nuclide}}{\text{uCi/ml of reference nuclide}}$ is taken from the calibration curve.

Values for E and Re are listed in Table B3-3 for selected nuclides.

3.2 Example Alarm Point Calculation for Liquid Effluents

In order to calculate the alarm set point for a particular liquid release, the relative concentration of each nuclide must be known. The count rate and the uCi/ml response of the liquid effluent detector may then be estimated by following the calculational technique described in the previous section.

The following example is solved for a mixture of five (5) nuclides as an example of this method.

Nuclides	Measured Concentrations (uCi/ml)	MPC (uCi/ml)
H 3	3.5E-06	3E-03
I 131	2.2E-07	3E-07
I 133	3.4E-07	1E-06
Cs 134	2.0E-08	9E-06
Cr 51	5.0E-09	2E-03

The first step is to calculate the effective MPC using Equation 3.1 as shown below:

$$MPC_{eff} = \frac{3.5E\text{-}06}{3.0E\text{-}03} + \frac{2.2E\text{-}07}{3.0E\text{-}07} + \frac{3.4E\text{-}07}{1.0E\text{-}06} + \frac{2.0E\text{-}08}{9.0E\text{-}06} + \frac{5.0E\text{-}09}{2.0E\text{-}03}$$

MPC_{eff} = 1.08 effective MPCs.

The second step is to calculate the response of the detector for each nuclide present in the mixture at the measured concentration using Equation 3.4.

Nuclide	estimated cpm	indicated response*
H 3	0	0
I 131	2.2E-07 * 1.94E08 = 43	2.2E-07 * 1.58 = 3.5E-07
I 133	3.4E-07 * 1.67E08 = 57	3.4E-07 * 1.36 = 4.6E-07
Cs 134	2.0E-08 * 3.14E08 = 6.43	2.0E-08 * 2.55 = 5.1E-08
Cr 51	5.0E-09 * 2.01E07 = 0.1	5.0E-09 * .163 = 8.2E-10
Total	106	8.6E-07

The last step is to calculate the detector response for a one MPC concentration by dividing the estimated response by the effective MPC.

alarm set point = 106 (cpm) / 1.08 = 99 (cpm/MPC)

or

alarm set point = 8.6E-07 (uCi/ml Cs 137) / 1.08 = 8.0E-07 (uCi/ml per MPC)

If the model RD-53 liquid effluent monitor were set to alarm at 8.0E-07 uCi/ml, the effective MPC of the radioactive waste would not exceed one during the release. If the flow of circulating coolant would permit, the alarm set point could be raised above 1 MPC by a dilution factor calculated in Equation 3.3 (the reciprocal of "A" or 1/A).

3.3 Gaseous Effluents

3.3.1 NRC Regulatory Requirements

NRC regulatory requirements for radioactive gaseous effluent channels, Radiological Effluent Technical Specification 3/4.11.2.1, requires that the dose rates at the site boundary and beyond from noble gases be kept less than or equal to 500 mrem/year total body and 3000 mrem/year to the skin. Furthermore, dose rates due to I-131, I-133, H-3, and all radionuclides in particulate form with half-lives greater than 8 days shall be less than or equal to 1500 mrem/year to any oragan.

3.3.2 Interpretation

In order to assure that this limit is not exceeded, the NRC (in section 5.1.1 of NUREG-0133) allows the alarm set point for the MEAB/RCB common exhaust to be calculated such that the nearest off-site receptor would not be exposed to noble gas concentrations greater than those of 10CFR20, Appendix B, Table II, Column 1. The same general method is used to calculate these alarm levels as was described previously for liquid releases.

* An estimated detector response assuming calibration to Cs-137 gamma radiation but exposure to other gamma radiations as calculated using Eq. 3.4.

3.3.3 Implementation

The nearest site boundary is about a mile from either unit, hence a factor to relate the stack release to the concentration at the site boundary is necessary. FSAR Tables 2.3-25 and 2.3-27 contain 2 hour and annual average X/Q values at the site boundary in each of 16 sectors. Logarithmic interpolation provides an estimate of 5.3E-06(sec/m^3) for the 500 hour X/Q in the NNW sector. This value of X/Q shall be used to provide estimates of dilution for the purpose of setting alarm points for routine releases. Containment purges or other planned short duration releases shall use 1.3E-04 (sec/m^3) (the 5% X/Q) or projected meteorology over the period of the release.

The next step is to choose whether to control emissions based upon the most prevalent radioactive gas present in the effluent or upon the actual mixture of gases. When the noble gas effluent is dominated by a single nuclide, the alarm point may be set based on the detector response to that single nuclide. Table B3-2 contains a listing of the RD-52 noble gas detector's response to a stack concentration corresponding to a 1 MPC concentration at the site boundary for several noble gases. If no single nuclide dominates, then release alarm set points should be based on the actual estimated mix.

This alternate method for estimating the alarm set point is based on the normal mix of noble gases expected to be emitted during a particular release period. The offsite noble gas concentration corresponding to the maximum permissible concentration (MPC) as described in 10CFR20 must be calculated. The stack concentrations for each nuclide are then estimated using the previously mentioned X/Q value along with the maximum stack flow rate of 8400 (cubic meters per minute).

From this step on, the methodology for calculating the alarm set point for a particular detector is identical to that described by Equations 3.1, 3.4, 3.5, and 3.6 of the previous section. It should be noted, however, that the routine airborne release detectors employ beta rather than gamma detectors. Therefore, the effective efficiencies are based on the number and energy of beta emissions per radioactive decay rather than on gamma emissions as is the case for the liquid release detectors.

Although Technical Specification 3/4.11.2.1 requires periodic confirmation that the offsite concentrations calculated for particulates, tritium, and iodine do not exceed an effective concentration of 1 MPC, no monitor alarm set points are necessary. NUREG-0133 acknowledges that for practical reasons such alarm set points could not be set unambiguously. Only the noble gas detector system is set to alarm at a particular stack concentration.

Although the above method is suitable for the common MEAB/RCB exhaust system, two other monitored atmospheric exhausts are not addressed. The TGB roof vent for the condenser vacuum pumps has its alarm set point dictated by plant safety considerations rather than offsite dose criteria. The flow through this vent is only 2 (cubic meters/ minute) and hence would not contribute significantly to the offsite dose unless the concentration of noble gas was exceedingly high, higher in fact than levels HL&P would permit to be exhausted onto the working deck of the turbine building. The set point for this detector is adjusted to assure the safety of plant personnel in conformance with plant operating procedures. Any releases from this vent will be included in monthly offsite dose calculations and will be reported in conformance with Regulatory Guide 1.21.

The other potential release is through the main atmospheric steam dumps which may release activity contained in the secondary coolant following turbine trips at greater than 50% power. These events are not frequent and the radiation monitoring system is not capable of accurately measuring this type of release since flow velocities would not be known in advance of the incident. The Semiannual Effluent Release Report will contain estimates for such releases based on the measured nuclide concentrations in the secondary coolant and the estimated mass of coolant vented. For example:

release of nuclide "i" = Flowrate * Time * Concentration

where Flowrate = estimated steam vent rate, lbs/sec;
Time = duration of release, sec;
Concentration = concentration of nuclide "i",uCi/lbs.

3.4 Example Alarm Point Calculation for Atmospheric Effluents

The following example is solved for a mixture of two noble gases monitored by the routine release gas detector. This method is appropriate for any number and combination of noble gas nuclides monitored by the RD-52.

Typical gas mixture:	50% Kr 85 and 50% Xe-133
X/Q:	5.3E-06 (sec per cubic meter)
Stack flow rate:	8400 (cubic meters per minute) or 140 (cubic meters per second)
MPC's:	3E-07 (uCi/ml) for Kr-85
	3E-07 (uCi/ml) for Xe-133

Two steps are necessary to calculate the alarm set point for this detector. The first step is to estimate the concentration at the stack which would result in an off-site concentration equal to the MPC limit for this mixture of gases.

The off-site MPC limit is calculated beginning with Equation 3.1 where the solution, MPC_{eff}, is set to one, 1.

$$1 = \frac{C1}{3E\text{-}07} + \frac{C2}{3E\text{-}07}$$

Since C1 = C2 for a 50:50 mixture, one simply substitutes and solves the equation as indicated below.

$$1 = \frac{2 * C}{3E\text{-}07} \qquad \text{or} \qquad C = 1.5E\text{-}07 \text{ uCi/ml}$$

Next the dilution from the stack to the site boundary must be estimated.

if $X/Q = 5.3E\text{-}06 \text{ (sec/m}^3\text{)}$
and $X = 1.5E\text{-}07 \text{ (uCi/ml)}$ for each nuclide at the site boundary,
$Q = \frac{1.5E\text{-}07}{5.3E\text{-}06 * 1E\text{-}06} = 1.36E05 \text{ (uCi/s)}$ at the stack for each nuclide.

Since the nominal flow rate is 140 m^3 per second, the average stack concentration for each nuclide would be

Kr-85 $\frac{2.83E04 \text{ uCi/sec}}{140 \text{ (m}^3\text{/sec)} * 1E6 \text{ (ml/m}^3\text{)}} = 2.0E\text{-}04 \text{ uCi/ml}$

Xe-133 $\frac{2.83E04 \text{ uCi/sec}}{140 \text{ (m}^3\text{/sec)} * 1E6 \text{ (ml/m}^3\text{)}} = 2.0E\text{-}04 \text{ uCi/ml}$

The second step is to estimate the RD-52 response to this mixture of nuclides assuming the detector is calibrated in uCi/ml of Xe-133. By substituting appropriate factors from Table 3.4 and the stack concentration of 9.6E-04 uCi/ml for each nuclide into Equation 3.4, one can calculate the detector alarm set point corresponding to one MPC offsite for this gas mixture.

$$\text{indicated response} = 1.89E+08 \frac{\text{cpm}}{\text{uCi/ml}} * 2.0E.04 \frac{\text{uCi}}{\text{ml}} + 6.99EE+07 \frac{\text{cpm}}{\text{uCi/ml}} * 2.0E\text{-}04 \frac{\text{uCi}}{\text{ml}}$$

indicated response = 5.2E+04 (cpm Xe-133)

Plant operation with the RD-52 alarm set to correspond to an effective off-site concentration less than or equal to 1 MPC shall demonstrate that the off-site hourly average dose rate does not exceed the Technical Specification 3/4.11.2.1 limits. If an unusual operating situation arises such that the release rate may approach the RD-52 alarm set point, the actual hourly average dose rate may be calculated using actual meteorological and release data with the methods of ODCM Part B, Section 4.3. The real time hourly average dose rate may be used to adjust the set point such that Technical Specification 3.11.2.1 limits are not exceeded during an unusual release situation.

Table B3-1: Liquid Release Detector, RD-53, Set Point Calculation

Nuclide	MPC Concentration (uCi/ml)	Limiting * Count Rate (cpm)	Indicated * Response (uCi/ml Cs-137)
Cr-51	2.0E-03	4.0E+04	3.3E-04
Mn-54	1.0E-04	1.3E+04	1.1E-04
Fe-59	6.0E-05	7.6E+03	6.2E-05
Co-58	1.0E-04	1.8E+04	1.5E-04
Co-60	5.0E-05	1.2E+04	9.8E-05
Rb-86	7.0E-05	7.4E+02	6.0E-06
Zr-95	6.0E-05	7.7E+03	6.3E-05
Nb-95	1.0E-04	1.3E+04	1.1E-04
Mo-99	2.0E-04	3.3E+04	2.6E-04
Tc-99m	6.0E-03	7.5E+05	6.1E-03
Te-129m	3.0E-05	2.0E+02	1.6E-06
I-130	3.0E-06	1.5E+03	1.2E-05
Ba-130	2.0E-05	1.2E+03	9.5E-06
La-130	2.0E-05	5.9E+03	4.8E-06
I-131	3.0E-07	5.8E+01	4.7E-07
Te-131m	6.0E-05	1.4E+04	1.2E-04
Te-132	3.0E-05	5.3E+03	4.4E-05
I-133	1.0E-06	1.7E+02	1.4E-06
Cs-134	9.0E-06	2.8E+03	2.3E-05
I-135	4.0E-06	6.0E+02	4.9E-06
Cs-136	9.0E-06	3.8E+03	3.1E-05
Cs-137	2.0E-05	2.5E+03	2.0E-05
Ce-144	1.0E-05	1.8E+02	1.4E-06

*Note: Values generated by multiplying the MPC by the appropiate factor from Table B3-3.

Table B3-2: Noble Gas Detector, RD-52, Response to Single Nuclide

Nuclide	MPC Concentration (uCi/cc)	Stack Concentration (uCi/cc)	Limiting Count Rate (cpm)	Indicated Response (uCi/cc Xe-133)
Kr-85m	1.0E-07	1.4E-04	2.1E+04	3.0E-04
Kr-85	3.0E-07	4.0E-04	7.6E+04	1.1E-03
Kr-87	2.0E-08	2.7E-05	6.2E+03	8.9E-05
Kr-88	2.0E-08	2.7E-05	5.2E+03	7.5E-05
Xe-133	3.0E-07	4.0E-04	2.8E+04	4.0E-04
Xe-135	1.0E-07	1.4E-04	2.8E+04	4.1E-04
Xe-138	3.0E-08	4.0E-05	9.4E+03	1.3E-04

Note: Stack Concentration= MPC * 1.35E+03 given that X/Q=5.3E-06 (sec/m^3) and the vent flow = 140 (m^3/sec);

Limiting Count Rate= Stack Concentration * E (from Table B3-4);

Indicated Response = Stack Concentration * Re (from Table B3-4).

Table B3-3: Liquid Release Detector, RD-53, Response to 1 uCi/ml of Each Nuclide

Nuclide	Count Rate Response (E) cpm / uCi/ml	Indicated Detector Response (Re) Ci/ml (Cs-137 Equivalent) / uCi/ml
Cr-51	2.01E+07	1.63E-01
Mn-54	1.30E+08	1.06E+00
Fe-59	1.27E+08	1.03E+00
Co-58	1.82E+08	1.48E+00
Co-60	2.40E+08	1.95E+00
Rb-86	1.05E+07	8.55E-02
Zr-95	1.29E+08	1.05E+00
Nb-95	1.29E+08	1.05E+00
Mo-99	1.63E+08	1.32E+00
Tc-99m	1.25E+08	1.02E+00
Te-129m	6.73E+06	5.47E-02
I-130	5.06E+08	4.11E+00
Ba-140	5.83E+07	4.74E-01
La-140	2.97E+08	2.41E+00
I-131	1.94E+08	1.58E+00
Te-131m	2.37E+08	1.93E+00
Te-132	1.78E+08	1.45E+00
I-133	1.67E+08	1.36E+00
Cs-134	3.14E+08	2.55E+00
I-135	1.51E+08	1.22E+00
Cs-136	4.24E+08	3.45E+00
Cs-137	1.23E+08	9.98E-01
Ce-144	1.76E+07	1.43E-01

Note: These values (E and Re) were calculated using the methods of Section 3.1 as shown in Eqs. 3.5 and 3.6.

Table B3-4: Noble Gas Detector, RD-52, Response to 1 uCi/cc of Each Nuclide

Nuclide	Count Rate Response (E) cpm / uCi/cc	Indicated Response (Re) uCi/cc (Xe-133 Equivalent) / uCi/cc
Kr-85m	1.53E+08	2.18
Kr-85	1.89E+08	2.70
Kr-87	2.31E+08	3.31
Kr-88	1.93E+08	2.76
Xe-133	6.99E+07	1.00
Xe-135	2.04E+08	2.93
Xe-138	2.36E+08	3.36

Note: These values (E and Re) were calculated using the methods of Section 3.1 as shown in Eqs. 3.4, 3.5, and 3.6.

4.0 Off-site Dose Calculations

4.1 Liquid Releases

4.1.1 NRC Regulatory Requirements

Specification 4.11.1.2 of the Radiological Effluent Technical Specifications requires that cumulative dose contribution estimates be calculated once every 31 days. The cumulative dose contributions should consider the dose or dose commitment to a MEMBER OF THE PUBLIC from radionuclides in liquid effluent releases. Such releases are limited to ensure that projected doses from each unit are:

a. less than or equal to 1.5 mrems to the total body and less than or equal to 5 mrems to any organ during any calendar quarter, and;
b. less than or equal to 3 mrems to the total body and less than or equal to 10 mrems to any organ during any calendar year.

If the above dose guides are not met, a report must be filed to the NRC Region IV office as required by 10CFR50, Appendix I.

4.1.2 Implementation of Technical Specification 3.11.1.2

In order to satisfy the requirements of Technical Specification 3.11.1.2, the individuals who suffer the maximum total body and organ doses due to liquid effluent releases are identified. The appropriate total body and organ doses, Dose(j), are calculated once a month for fish ingestion and shoreline exposure for each potentially exposed individual (Little Robbins area, Colorado River, and Matagorda Bay/Gulf). These doses are summed for both pathways at each location and compared with the limits of Technical Specification 3.11.1.2.

$$\text{Dose}(j) = \sum_{\text{path } i} \sum_{\text{pathway}} Q(i) * R(\text{adult},i,j) \quad \text{(mrem)} \quad \text{Eq. 4.1}$$

where Qi and R(a,i,j) are described in Table B4-2 and where the values for R(adult,i,j) are taken from Table B4-7.

4.2 Liquid Exposure Dose Model

4.2.1 Pathways for Radionuclide Ingestion by Man

Radionuclides which have been released from either unit mix with the water of the reservoir. These nuclides are expected to be further diluted into the Colorado River with blowdown operations or releases via the spillway overflow (following unusually heavy rains). Water containing trace amounts of radionuclides may diffuse through the bottom of the reservoir and become mixed with shallow ground water. Hydraulic relief wells about the reservoir perimeter may include in

their discharge some of this diluted radionuclide bearing water. These discharges enter the Colorado River, the West Branch Colorado River, and Little Robbins Slough (composed of both branches of Little Robbins Slough; sometimes called West Little Robbins Slough and East Fork Little Robbins Slough). These streams discharge into either Matagorda Bay or the Gulf of Mexico.

4.2.1.1 Colorado River Environment . The Colorado River is used primarily for sport fishing and occasionally for barge traffic. No municipal water supplies lie downstream from the plant discharge structure and none are likely to be developed because of the high salt content of the river in this area. A few water use permits allow irrigation of crop land with water taken downstream from the plant, but these permits are seldom (if ever) exercised.

STPEGS possesses Environmental Protection Agency and Texas Department of Water Resources permits which allow the plant to discharge cooling reservoir water only if the river flow exceeds 800 cfs. The average flow rate of the Colorado is about 600 cfs which means blowdown can only occur in rainy periods when river flow is higher than 800 cfs (about 40% of the time). Because such planned discharges and any unplanned spillway releases are likely to occur only during rainy periods, no irrigation is likely with water bearing plant released radionuclides even if the other water use permits were active. Therefore, no individual or population dose estimates are made on the basis of irrigation with surface water containing radionuclides originating from STPEGS reservoir releases.

The only credible pathway available for internal exposure is the consumption of sea trout, red drum, flounder, catfish, crabs, and shrimp known to be taken from the river by sports fishermen.

Since two small communities are built on the river, one near the discharge facility (Selkirk Island) and the other about seven miles downstream (Matagorda), external exposure is also possible due to shoreline deposits. A number of recreational cabins and trailers also line the east shore of the river south of Matagorda to the Gulf of Mexico (see Figures B4-1 and B4-2).

4.2.1.2 Little Robbins Slough Environment . Little Robbins Slough drains through a marsh accessible to local land owners only. Fresh water fish may be taken from ponds in this area for sport. However, the annual take is normally small and limited to a few families. Also, some cattle graze in areas where water from Little Robbins Slough might be ingested, and the meat from such animals might be eaten by the land owner or others in the local community. No firm data regarding average annual consumption are available.

4.2.1.3 Matagorda Bay and the Gulf of Mexico . The Colorado River, West Branch Colorado, Little Robbins Slough, and the East Fork Little Robbins Slough all discharge into either Matagorda Bay or the

Gulf of Mexico as shown in Figure B4-1. Because these bodies of water are connected by natural and man-made channels and the resulting circulation patterns are unknown, no mixing models are available to predict concentrations. Therefore, the nuclide concentrations in those saltwater areas are conservatively estimated to be 1/10 the Colorado River concentration.

Internal dose from nuclides reaching Matagorda Bay or the Gulf of Mexico is due to the consumption of sea trout, red drum, and flounder by sports fishermen, and crabs, shrimp, and oysters taken both commercially and by sportsmen.

Since the town of Palacios is built on the shores of Matagorda Bay and a public beach exists on the Gulf of Mexico near the discharge of the Colorado River, external exposure due to shoreline deposits is possible.

4.2.2 Model for Reservoir Related Radionuclide Decay and Release Offsite

A generally conservative calculation of the offsite dose is accomplished using offsite liquid effluent releases estimated according to the method described in this section.

Table B4-1 lists fractions as calculated by this method for each radionuclide anticipated to be released to the reservoir. These fractions represent the portion of a particular liquid effluent release from the plant which will eventually leave the site. These fractions are different for each release route from the reservoir and consist of the product of the variable "Floss" and one or more of the variables "fc, fwc, flrs, and felrs" as described below.

4.2.2.1 Development of Annual Average Liquid Offsite Release Estimates Based on Releases to the Reservoir .

Assumptions:

1. The reservoir is always well mixed.
2. Nuclides released to the reservoir decay for 14 days before becoming available for transport out of the reservoir (transport time to the blowdown structure with both units at full power).
3. Releases to the reservoir approximate a continuous release.
4. This model assumes that blowdown from the reservoir is also a continuous activity. Since blowdown activity should never release more than a few percent of the reservoir at one time, this assumption should generally lead to conservative release estimates.

5. The reservoir volume is fixed at 150,000 AF.
6. The seepage rate is 5700 AF/y to the shallow aquifer.
7. The evaporation rate is 38,592 AF/y.
8. The blowdown rate is 13,425 AF/y to the Colorado River.
9. Relief well flow to the Colorado River is 1000 AF/y.
10. Relief well flow to the W. Colorado River is 210 AF/y.
11. Relief well flow to the Little Robbins Slough is 1200 AF/y.
12. Relief well flow to E. Fork Little Robbins Slough is 1500 AF/y.

NOTE: Data for items 9, 10, 11, and 12 are from the STP FSAR, Rev. 37, Figure 2.4.13-20 and Table 2.4.13-6.

4.2.2.2 Liquid Offsite Effluent Release Estimates for Nonvolitile Radionuclides (Evaporation of Tritium and Water omitted) .

Y = loss rate due to seepage and blowdown
= 19125 AF/y per 150,000 AF = 0.1275 per year
= 3.49E-04 per day

Yr = loss rate due to radioactive decay
= 0.693 / (nuclide half-life in days)

fc = fraction of loss reaching the Colorado River
= (1000 AF/y + 13,245 AF/y) per 19,125 AF/y = 0.754

fwc = fraction of loss reaching the W. Branch Colorado
= 210 AF/y per 19,125 AF/y = 0.011

flrs = fraction of loss reaching the Little Robbins Slough
= 1200 AF/y per 19,125 AF/y = 0.063

felrs = fraction of loss reaching the E. Fork of Little Robbins Slough
= 1500 AF/y per 19,125 AF/y = 0.078

Floss = fraction of activity which eventually leaves STPEGS following release to the reservoir

$$= \frac{Y}{Y + Yr} * EXP[-Yr*14]$$

Ai = activity discharged to the reservoir by nuclide in a given release (Ci)

Qc, Qwc, Qlrs, Qelrs = releases at each discharge point from STPEGS by nuclide (less 14 days of decay, Ci)

Colorado River:	Qc = Ai * fc * Floss
W. Branch Colorado:	Qwc = Ai * fwc * Floss
Little Robbins Slough:	Qlrs = Ai * flrs * Floss
E. Fork Little Robbins Slough:	Qelrs = Ai * felrs * Floss

4.2.2.3 Tritium Offsite Releases in Liquid Effluents (Evaporative Losses Included) .

Y = 57,717 AF/y per 150,000 AF = 0.385 per year
= 1.05E-03 per day

Yr = 0.693 / 4506 days = 1.54E-04 per day

fc = (1000 AF/y + 13,425 AF/y) per 57,717 AF/y = 0.2499

fwc = 210 AF/y per 57,717 AF/y = 0.0036

flrs = 1200 AF/y per 57,717 AF/y = 0.0208

felrs = 1500 AF/y per 57,717 AF/y = 0.0260

Floss = 1.05E-03 / (1.05E-03 + 1.54E-04) = 0.872

Ai = tritium activity released to the reservoir

Qc, Qwc, etc. = calculated as previously described

4.2.3 Off-site Doses from Liquid Effluents

Liquid pathway doses are calculated using the total integrated nuclide releases (Qc, Qwc, etc.). These releases are diluted into the annual average flow of the receiving body of water. Resulting doses will generally over estimate the true offsite values since the activity would normally leave STPEGS over several years and hence would be diluted by substantially more than one year's flow volume once offsite. For example, 50% of the activity contained in the reservoir is released approximately every 5.4 years (evaporation excluded), hence no more than 12% of a very long lived nuclide would leave the site via liquid pathways in any one year. Nevertheless, the projected dose for each release is estimated based upon the assumption that all the activity destined to leave the reservoir does so in the current year. These doses are summed to calculate the month's contribution to the committed dose to the MEMBER OF THE PUBLIC suffering the greatest dose due to liquid releases. This individual's dose is determined by the consumption of fish and marine invertebrates plus shoreline exposure along the Colorado River, Matagorda Bay/Gulf of Mexico, or the Little Robbins Slough as calculated below.

4.2.3.1 Fish Ingestion Pathway . The pathway dose factors for an individual who ingests saltwater fish, crabs, and shrimp from the Colorado River, Matagorda Bay/Gulf, or freshwater fish from the Little Robbins area are calculated using Equation 4.1 where the parameter descriptions are in Table B4-2 and the parameter values are as listed in Table B4-3. The resulting pathway dose factors are tabulated in Table B4-7.

$$R(a,i,j)_{\text{pathway}} = 1100 * \frac{U}{M*F} * \sum_i N(i)*B(i) * D(a,i,j) * Exp\,[-Y(i)*T] \quad \text{Eq. 4.2}$$

(mrem/Ci)

4.2.3.2 Shoreline Deposition Pathway . Individuals who live in the area could be exposed to accumulations of contaminated silt deposited along the Colorado River bank, along Little Robbins Slough, or on the beaches of Matagorda Bay and the Gulf of Mexico. The pathway dose factors from these potential shoreline deposits are calculated using Equation 4.3 with the parameters described in Table B4-2 and with values as listed in Table B4-3. The resulting pathway dose factors are compiled in Table B4-7.

$$R(a,i,j)_{\text{shore exposure}} = 110{,}000 * \frac{Ub*W}{M*F} * \sum_i N(i) * T(i) * D(a,i,j) \quad \text{Eq. 4.3}$$

$$* Exp[-Y(i)*T] * (1 - Exp[-Y(i)*Tb]) \quad (\text{mrem/Ci})$$

4.3 Gaseous Releases

4.3.1 NRC Regulatory Requirements

Technical Specification 3.11.2.1 of the Radiological Effluent Technical Specifications requires that the instantaneous dose rate in unrestricted areas due to radioactive materials released in gaseous effluents from the site be limited to the following values:

a. The dose rate limit for noble gases must be less than 500 mrem/yr to the total body and less than 3000 mrem/yr to the skin, and

b. The dose rate limit for all radionuclides other than noble gases with half lives greater than 8 days be less than 1500 mrem/yr to any organ.

These requirements stem from the STPEGS commitment to meet the minimum radiological protection limits of 10CFR20.

Technical Specification 3.11.2.2 of the Radiological Effluent Technical Specifications also requires that the air dose in areas at or beyond the site boundary due to noble gases released in gaseous effluents shall be limited to the following:

a. During any calendar quarter, to less than or equal to 5 mrads for gamma radiation and 10 mrads for beta radiation, and

b. During any calendar year, to less than or equal to 10 mrads for gamma radiation and 20 mrads for beta radiation.

Technical Specification 3.11.2.3 further limits the dose to a MEMBER OF THE PUBLIC from I-131, I-133, tritium, and radionuclides in particulate form with half lives greater than 8 days in gaseous effluents released to areas at or beyond the site boundary as follows:

a. During any calendar quarter to less than or equal to 7.5 mrems to any organ; and

b. During any calendar year to less than or equal to 15 mrems to any organ.

These last two requirements stem from HL&P's commitment to operate STPEGS within the guidelines described in 10CFR50, Appendix I for maintaining doses to the public as low as reasonably achievable.

4.3.2 Implementation of Technical Specification 3.11.2.1

4.3.2.1 Noble Gases . All gaseous effluent releases from STPEGS are assumed to be ground level due to the proximity of each unit's vent to the roof. For the purpose of demonstrating that off-site dose rates have not exceeded the dose rate limits of this Technical Specification, the atmospheric dispersion factor, X/Q, may be assumed to be 1.1E-06 sec/cubic meter for manual calculations. This represents the highest annual average X/Q at the site boundary and occurs in the NNW sector. When computer calculations are possible, actual hourly X/Q values coupled with hourly release data are used in place of composite release data and historical average X/Qs.

The hourly average dose rate to the whole body due to noble gas releases may be estimated using Equation 4.8.

The hourly average dose rate to the skin due to noble gas releases may be estimated using Equation 4.9 of this section provided the shielding factor, Sf, equals 1.0 for the purpose of determining compliance with Technical Specification 3.11.2.1.

4.3.2.2 Iodine and Particulates . The hourly average dose rate to the critical organ, j, in the critical age group, a, due to particulate releases may be estimated as follows:

$$\text{Dose rate}(a,j) = X/Q * \sum_{i}^{\text{inhalation}} R(a,i,j) * Q(i) + \qquad \text{Eq. 4.4}$$

$$D/Q * \sum_{i}^{\text{path}} \sum_{\text{pathway}} \left(R(a,i,j) \right) * Q(i) \qquad \text{(mrem/hr)}$$

where $Q(i)$ = release rate of nuclide "i" (Ci/hr),
X/Q = 1.1E-06 (sec / m^3),
D/Q = 9.4E-09 (1 / m^2),
$R(a,i,j)_{\text{pathway}}$ = pathway dose factors from Table B4-7 (mrem-m^3/Ci-sec).

The highest organ dose so calculated may be used for demonstrating compliance with Technical Specification 3.11.2.1.

4.3.3 Implementation of Technical Specification 3.11.2.2

NUREG-0133 allows HL&P to use the highest calculated annual average X/Q for STPEGS to calculate doses for comparison with the quarterly and annual dose limits. However, NUREG-0133 requires the use of the highest 500 hour average X/Q for doses due to short term releases. HL&P normally has available hourly average X/Q values for each sector plus time dated release information. When possible, these hourly X/Q values coupled with hourly release data are used in place of composite release data and historical average X/Qs.

Nevertheless, the historical dispersion values to be used for manual calculations are: annual average releases = 1.1E-06 and 500 hour or shorter releases = 5.3E-06 seconds per cubic meter.

4.3.3.1 Noble Gases . The noble gas releases averaged over a calendar quarter or a calendar year result in a dose to air at the site boundary as calculated using Equations 4.10 for gamma radiation and Equation 4.12 for beta radiation.

4.3.4 Implementation of Technical Specification 3.11.2.3

4.3.4.1 Iodines, Tritium, and Particulates . The dose to a MEMBER OF THE PUBLIC stationed at or beyond the site boundary due to radioiodine and particulate releases is estimated using Equation 4.13 and 4.20 and the appropriate pathway dose factor from Table B4-7.

4.4 Gaseous Dose Models and Dose Formulas

4.4.1 Dispersion Calculation Methods

If current meteorological data are used to estimate dispersion, X/Q, in place of the historical values, calculations for routine releases use the sector-average version of the equations for atmospheric relative concentration. These calculations are made in accordance with the methodology in NRC Regulatory Guide 1.111 and are all based on ground level releases.

4.4.1.1 X/Q Calculation . The sector average X/Q for a given hour is calculated using:

$$X/Q = \frac{2.03}{Um * Dxqc * Smn} \quad (sec/m^3) \qquad \text{Eq. 4.5}$$

where $Smn = [\ sz^2 + (\ Hcon^2 / 2*pi\ )\ ]^{1/2}$

or $Smn = sz * (3)^{1/2}$; whichever is less;

and Hcon = building height (meters),
sz = vertical dispersion coefficient (meters),
Smn = dispersion coefficient with building wake factor included (meters),
Dxqc = down wind distance to the receptor (meters),
Umn = hourly average wind speed (meters/second),

$2.03 = (2 / pi)^{1/2}$ divided by the sector width in radians.

4.4.1.2 Depleted X/Q Calculation . X/Q values are used in conjunction with tritium and noble gases released. However, the downwind concentrations for particulates and radioiodines will be affected by ground deposition. X/Q values used for calculating inhalation doses from particulates and radioiodines must be modified by the ground depletion factors of Table B4-4 (from Figure 2 of NRC Regulatory Guide 1.111).

$$(X/Q)_{depl} = (X/Q) * (\text{ground depletion factor}) \quad (sec/m^3) \quad \text{Eq. 4.6}$$

4.4.1.3 Ground Deposition . Ground deposition is calculated using the deposition factors of Table B4-4 (also from Regulatory Guide 1.111, Figures 6 to 9).

$$(D/Q) = \frac{(\text{deposition factor})}{Dxqc * 0.3927} \quad (1/m^2) \quad \text{Eq. 4.7}$$

where 0.3927 = radians in one sector or (2 * pi) / 16 ,
Dxqc = down wind distance (meters).

Deposition calculated by multiplying this term, D/Q, by the release rate, Q, will yield values independent of atmospheric stability as indicated in NRC Regulatory Guide 1.111.

4.4.2 Submersion Dose From Noble Gases

The methods used to estimate doses due to noble gases are those of Regulatory Guide 1.109. The whole body and skin doses from submersion in a cloud of noble gas may be calculated by multiplying the appropriate dose factor for the plume pathway from Table B4-7 by the dispersion, X/Q. An equivalent calculation can be accomplished using the formulas described in the following three subsections:

4.4.2.1 Whole Body Dose

$$D_{gamma} = 0.114 * X/Q * \sum_i (Qi * Dfi_{gamma}) \quad (rem/hr) \quad \text{Eq. 4.8}$$

where 0.114 = conversion factor from $(mrem-m^3)/(pCi-yr)$ to $(rem-m^3)/(uCi-hr)$
X/Q = from Equation 4.5 (sec/m^3)
Qi = isotope "i" release rate (uCi/sec) from monitors #RT-8010 and #RT-8027
Dfi = gamma dose to tissue conversion factor for nuclide gamma "i" from Table B-1 of Regulatory Guide 1.109 $(mrem-m^3 / pCi-yr)$.

4.4.2.2 Skin Dose from Noble Gases . Skin dose is calculated based on both the beta emissions and gammas coming from the noble gas cloud surrounding the receptor.

$$D_{skin} = 1.11 * S_f * D_{gamma(air)} + D_{beta(skin)} \quad \text{(rem)} \qquad \text{Eq. 4.9}$$

where $$D_{gamma(air)} = 0.114 * X/Q * \Sigma_i Qi * Dfi_{gamma(air)} \quad \text{(rad)} \qquad \text{Eq. 4.10}$$

and $$D_{beta(skin)} = 0.114 * X/Q * \Sigma_i Qi * Dfi_{beta(skin)} \quad \text{(rem)} \qquad \text{Eq. 4.11}$$

S_f = shielding factor = .7

$Dfi_{beta(skin)}$ = beta dose to tissue conversion factor from Table B-1, Regulatory Guide 1.109 (mrem-m^3 / pCi-yr),

$Dfi_{gamma(air)}$ = gamma dose to air conversion factor from Table B-1, Regulatory Guide 1.109 (mrad-m^3 / pCi-yr),

1.11 = ratio of the mass stopping powers for electrons in air to tissue.

The gamma dose to air is calculated here as an intermediate step in calculating the total dose to skin from noble gases. However, this gamma dose to air value, D gamma(air) from Equation 4.10 may be used to demonstrate compliance with the first part of Technical Specification 3.11.2.2.

4.4.2.3 Beta Dose to Air from Noble Gases . Beta dose to air at the site boundary is a required dose calculation in Technical Specification 3.11.2.2 and is calculated as indicated below:

$$D_{beta(air)} = 0.114 * X/Q * \Sigma_i Qi * Dfi_{beta(air)} \quad \text{(rad)} \qquad \text{Eq. 4.12}$$

where $Dfi_{beta(air)}$ = beta dose to air conversion factor from Table B-1, Regulatory Guide 1.109 (mrad-m^3 / pCi-yr),

0.114 = conversion factor from (mrem-m^3 /pCi-yr) to (mrem-m^3 /uCi-hr),

X/Q = from Equation 4.5 (sec/m^3),

Qi = isotope "i" release rate (uCi/sec) from monitors #RT-8010 and #RT-8027.

4.4.3 Dose Due to Inhaled and Deposited Particles

The dose delivered to the individual with the highest potential exposure due to airborne radioactive particles is calculated in accordance with NRC Regulatory Guide 1.109. The dose by ingestion pathways is the product of the ground deposition, D/Q, from Equation 4.7 and the pathway dose factor for the appropriate organ and nuclide from Table B4-7 as follows:

$$\text{Dose}_{(\text{pathway})} = (D/Q) * \sum_i Q_i * R_i \quad \text{(mrem)} \qquad \text{Eq. 4.13}$$

where Q_i = integrated release of nuclide "i" stored by plant computer from monitors #RT-8010 and #RT-8027 (Ci),

D/Q = ground deposition ($1/m^2$),

$R(a,i,j)$ = age, nuclide, and organ specific dose factor ($mrem\text{-}m^2/Ci$).

The ground deposition is calculated at the site boundary in each of the 16 wind direction sectors. However, since some cattle may graze on site outside the exclusion area, the meat pathway doses are calculated at the exclusion area fence or the reservoir embankment whichever is further from the units.

For the inhalation pathway, the depleted X/Q from Equation 4.6 is substituted for D/Q in Equation 4.13.

The exposure pathway dependent dose factors, R(a,i,j), are from Table B4-7 which was generated using a code similar to NRC's GASPAR routine as described in NUREG-0597. These dose factors were calculated for the pathways, organs, and age groups below:

Pathways	Organs	Age Groups
inhalation	total body	infant
meat ingestion	G.I. tract	child
milk ingestion	bone	teen
vegetation ingestion	liver	adult
ground shine	kidney	
	thyroid	
	lung	
	skin	

4.4.3.1 Inhalation Pathway Factors . The inhalation pathway dose factors of Table B4-7 were calculated using the methods and default parameter values as described in Regulatory Guide 1.109. Table B4-5 and B4-6 list the default values used in these calculations. The following equation was used to generate the inhalation pathway dose factors of Table B4-7:

$$R(a,i,j)_{inhalation} = K * Br * DFAi \quad (mrem\text{-}m^3/Ci\text{-}sec) \quad \text{Eq. 4.14}$$

where K = 3.17E+04 = conversion factor from (pCi/sec) to (Ci/yr),

Br = appropriate breathing rate from Table B4-6 (m^3 /yr),

DFAi = organ dose factor as described in Table B4-5 (mrem/pCi).

4.4.3.2 Meat Ingestion Pathway Factor . The pathway factors for particulate radionuclides deposited on grass and feed crops leading to ingestion by man via beef harvested near STPEGS may be estimated in a manner very similar to that described in NUREG-0133:

$$R(a,i,j)_{meat} = \frac{K * Qf * Uap * F * R * Dfl}{Yi * Yw} * \left[\frac{Fp * Fs}{Yp} + \frac{(1 - Fp * Fs)}{Ys} * EXP(-Yi*Th)\right] * EXP(-Yi*Tf) \quad (mrem\text{-}m^2/Ci) \quad \text{Eq. 4.15}$$

where the appropriate parameters are described in Table B4-5 and have nominal values as listed in Table B4-6.

These pathway dose factors, R(a,i,j), are listed for each nuclide, each organ, and age group in Table B4-7. The dose due to this pathway is calculated as in Equation 4.13.

4.4.3.3 Milk Ingestion Pathway Factor . The milk ingestion pathway factors of Table B4-7 may be approximated using the methodology of NUREG-0133 as described above in Equation 4.15 substituting values appropriate for milk consumption for those used for meat. The appropriate parameter values for milk are listed in Table B4-6. As for the meat pathway described above, the dose is calculated using Equation 4.13 and the ground deposition.

4.4.3.4 Vegetation Ingestion Pathway Factor . The pathway factor for nuclide ingestion with vegetation may be estimated as follows:

$$R(a,i,j)_{vegetation} = \frac{K * R}{Yv * (Yi + Yw)} * Dfl * [Uap * Fl * EXP(-Yi*Tl) + Uaps * Fg * EXP(-Yi*Th)] \quad (mrem\text{-}m^2/Ci) \quad \text{Eq. 4.16}$$

The parameters are as described in Table B4-5 and have the values listed in Table B4-6. The dose due to this pathway is calculated based on ground deposition using Equation 4.13 as are the other deposition pathway factors.

4.4.3.5 Ground Shine Pathway Factor . The ground plane pathway factor is estimated as follows:

$$R(a,i,j)_{ground} = K * K'' * Sf * Dfl * \frac{(1 - EXP(-Yi*T))}{Yi} \quad \text{Eq. 4.17}$$

$(mrem\text{-}m^2/Ci)$

The factors are as described in Table B4-5 and have the values listed in Table B4-6. These pathway dose factors, R(a,i,j), are listed for each nuclide and for the most restrictive organ and age group in Table B4-7. The annual dose due to this pathway is estimated as in Equation 4.13.

4.4.4 Tritium Exposure Pathways

Tritium ingestion pathways for atmospheric releases are based on the airborne concentrations rather than the deposition. Furthermore, the uptake by plants and animals is governed in large part by the absolute humidity, the water content of feed, and other factors unique to this nuclide. Consequently, the pathway specific dose factors for tritium may be estimated separately from particulates and iodines in a manner similar to the following:

4.4.4.1 Meat Ingestion Pathway Factor

$$R_{i_{meat}} = K * K'' * F * Qf * Uap * Dfl * 0.75 * 0.5/H \quad \text{Eq. 4.18} \quad (\text{mrem-m}^3/\text{Ci})$$

4.4.4.2 Milk Ingestion Pathway Factor . The milk ingestion pathway dose factors for tritium may be calculated using the same formula listed above for meat and the appropriate parameter values from Table B4-6.

4.4.4.3 Vegetation Ingestion Pathway Factor

$$R_{i_{vegetation}} = K * K'' * (Uap * Fl + Uaps * Fg) * Dfl * 0.75 * 0.5/H \quad \text{Eq. 4.19} \quad (\text{mrem-m}^3/\text{Ci})$$

where K'' = 1E03 g/kg, conversion constant,
H = 13 g/cubic meter, absolute humidity,
0.75= fraction of total feed that is water,
0.5 = ratio of the tritium concentration in feed grass water to the atmospheric water,
and all other parameters are as described in Tables B4-5 and B4-6.

The annual dose due to tritium in each pathway is calculated as:

$$\text{Dose}_{(\text{tritium})} = X/Q * Q * R(a,j)_{\text{pathways}} \quad (\text{mrem}) \quad \text{Eq. 4.20}$$

where Q = annual average release rate for tritium alone as determined by routine sampling (Ci/sec).

4.5 Technical Specification 3.11.4 Dose Calculations

If the annual dose or dose commitment to a MEMBER OF THE PUBLIC due to releases of liquid or gaseous effluents exceeds twice the limits of Technical Specifications 3.11.1.2.a, 3.11.1.2.b, 3.11.2.2.a, 3.11.2.2.b, 3.11.2.3.a, or 3.11.2.3.b, Specification 3.11.4 requires that the total dose from the uranium fuel cycle be calculated.

Since no mining, milling, or waste disposal activities exist within 50 miles of STPEGS, only direct radiation from plant structures need be added to that calculated for effluents to obtain the total dose. Direct radiation from the plant and plant structures is estimated based on ambient radiation measurements made in the proximity of each potential source within a direct line of sight to the critical receptor location. Air attentuation and distance corrections may be made to the dose rate calculated at the critical receptor location. The direct radiation dose shall be added to the doses previously calculated for radioactive effluents for comparison with the limits of 40CFR Part 190.

4.6 Dose to MEMBERS OF THE PUBLIC On Site

MEMBERS OF THE PUBLIC who visit STPEGS may be subject to direct radiation exposure at extremely low levels. MEMBERS OF THE PUBLIC are permitted to skirt the site boundary on Farm to Market Highway #521 for about five miles. MEMBERS OF THE PUBLIC are also allowed access to the visitor's center which is within the site boundary on FM #521.

The design basis dose rate at the exterior walls of site structures is 0.5 mrem/hr and the highway and visitor's center are almost 1500 meters from the closest site structure containing radioactive materials. Therefore, the maximum dose rates to MEMBERS OF THE PUBLIC visiting the site would generally not exceed 0.0005 mrem/hr of direct radiation. Nominal visits of a few hours in duration to the visitor's center, or daily trips past the site on FM #521, or short (less than one hour) tours on site would lead to an annual maximum dose to a MEMBER OF THE PUBLIC of less than 1 mrem/yr.

Examples:

The on site exposure to a MEMBER OF THE PUBLIC who must drive past the plant twice a day (to work and home again) 250 days per year is calculated as follows:

$$0.0005 \ \frac{\text{mrem}}{\text{hr}} * 0.085 \ \frac{\text{hr}}{\text{trip}} * 2 \ \frac{\text{trips}}{\text{day}} * 250 \ \frac{\text{days}}{\text{yr}} = 0.02 \ \frac{\text{mrem}}{\text{yr}}$$

The dose to a MEMBER OF THE PUBLIC at the visitor's center is calculated as:

$$0.0005 \ \frac{\text{mrem}}{\text{hr}} * 2 \ \frac{\text{hr}}{\text{visit}} * 2 \ \frac{\text{visits}}{\text{yr}} = 0.002 \ \frac{\text{mrem}}{\text{yr}}$$

The maximum dose to a MEMBER OF THE PUBLIC touring the site is estimated as:

$$0.5 \ \frac{\text{mrem}}{\text{hr}} * 0.5 \ \frac{\text{hr}}{\text{tour}} * 2 \ \frac{\text{tours}}{\text{yr}} = 0.5 \ \frac{\text{mrem}}{\text{yr}}$$

Table B4-1: Radionuclide Fractions Leaving STPEGS Via Liquid Routes

Nuclide	Halflife (days)	Colorado River	Matagorda Bay Gulf of Mexico	Little Robbins Slough Area
H-3	4.51E+03	2.18E-01	2.62E-01	4.08E-02
C-14	2.09E+06	7.53E-01	9.05E-01	1.41E-01
Na-24	6.26E-01	4.45E-11	5.35E-11	8.31E-12
P-32	1.43E+01	2.74E-03	3.29E-03	5.12E-04
Cr-51	2.77E+01	7.31E-03	8.78E-03	1.37E-03
Mn-54	3.12E+02	9.93E-02	1.19E-01	1.86E-02
Mn-56	1.07E-01	2.26E-44	2.72E-44	4.23E-45
Fe-55	9.86E+02	2.48E-01	2.98E-01	4.63E-02
Fe-59	4.51E+01	1.35E-02	1.62E-02	2.53E-03
Co-58	7.08E+01	2.26E-02	2.72E-02	4.23E-03
Co-60	1.92E+03	3.69E-01	4.43E-01	6.90E-02
Ni-63	3.65E+04	7.15E-01	8.59E-01	1.34E-01
Ni-65	1.05E-01	2.96E-45	3.56E-45	5.55E-46
Cu-64	5.30E-01	2.22E-12	2.67E-12	4.16E-13
Zn-65	2.44E+02	7.92E-02	9.52E-02	1.48E-02
Zn-69	3.86E-02	0.00E+00	0.00E+00	0.00E+00
Br-83	9.96E-02	1.85E-47	2.22E-47	3.45E-48
Br-84	2.21E-02	0.00E+00	0.00E+00	0.00E+00
Br-85	1.99E-03	0.00E+00	0.00E+00	0.00E+00
Rb-86	1.86E+01	4.15E-03	4.99E-03	7.77E-04
Rb-88	1.24E-02	0.00E+00	0.00E+00	0.00E+00
Rb-89	1.07E-02	0.00E+00	0.00E+00	0.00E+00
Sr-89	5.05E+01	1.54E-02	1.85E-02	2.89E-03
Sr-90	1.04E+04	6.33E-01	7.61E-01	1.18E-01
Sr-91	4.03E-01	5.33E-15	6.41E-15	9.98E-16
Sr-92	1.13E-01	2.07E-42	2.49E-42	3.88E-43
Y-90	2.67E+00	2.68E-05	3.22E-05	5.01E-06
Y-91m	3.45E-02	0.00E+00	0.00E+00	0.00E+00
Y-91	5.85E+01	1.83E-02	2.20E-02	3.42E-03
Y-92	1.47E-01	1.26E-33	1.51E-33	2.35E-34
Y-93	4.29E-01	2.48E-14	2.98E-14	4.63E-15
Zr-95	6.44E+01	2.04E-02	2.45E-02	3.81E-03
Zr-97	7.00E-01	2.54E-10	3.05E-10	4.75E-11
Nb-95	3.52E+01	9.95E-03	1.20E-02	1.86E-03
Mo-99	2.76E+00	3.10E-05	3.73E-05	5.80E-06
Tc-99m	2.51E-01	1.52E-21	1.83E-21	2.84E-22
Tc-101	9.86E-03	0.00E+00	0.00E+00	0.00E+00
Ru-103	3.94E+01	1.15E-02	1.38E-02	2.14E-03
Ru-105	1.85E-01	1.18E-27	1.42E-27	2.20E-28
Ru-106	3.68E+02	1.15E-01	1.38E-01	2.15E-02
Ag-110m	2.50E+02	8.11E-02	9.74E-02	1.52E-02
Te-125m	5.80E+01	1.81E-02	2.17E-02	3.38E-03
Te-127m	1.09E+02	3.59E-02	4.31E-02	6.71E-03
Te-127	3.90E-01	2.26E-15	2.72E-15	4.23E-16
Te-129m	3.36E+01	9.40E-03	1.13E-02	1.76E-03
Te-129	4.83E-02	1.22E-92	1.47E-92	2.28E-93

Table B4-1: Radionuclide Fractions Leaving STPEGS Via Liquid Routes

Nuclide	Halflife (days)	Colorado River	Matagorda Bay Gulf of Mexico	Little Robbins Slough Area
Te-131m	1.25E+00	2.02E-07	2.43E-07	3.78E-08
Te-131	1.74E-02	0.00E+00	0.00E+00	0.00E+00
Te-132	3.25E+00	6.19E-05	7.44E-05	1.16E-05
I-130	5.15E-01	1.29E-12	1.55E-12	2.41E-13
I-131	8.04E+00	9.10E-04	1.09E-03	1.70E-04
I-132	9.92E-02	1.22E-47	1.47E-47	2.28E-48
I-133	8.46E-01	3.35E-09	4.03E-09	6.27E-10
I-134	3.65E-02	0.00E+00	0.00E+00	0.00E+00
I-135	2.75E-01	5.26E-20	6.32E-20	9.83E-21
Cs-134	7.53E+02	2.05E-01	2.05E-01	0.00E+00 *
Cs-136	1.30E+01	2.32E-03	2.32E-03	0.00E+00 *
Cs-137	1.10E+04	6.38E-01	6.38E-01	0.00E+00 *
Cs-138	2.24E-02	0.00E+00	0.00E+00	0.00E+00 *
Ba-139	5.90E-02	7.65E-77	9.19E-77	1.43E-77
Ba-140	1.28E+01	2.26E-03	2.72E-03	4.23E-04
Ba-141	1.27E-02	0.00E+00	0.00E+00	0.00E+00
Ba-142	7.43E-03	0.00E+00	0.00E+00	0.00E+00
La-140	1.68E+00	1.96E-06	2.36E-06	3.67E-07
La-142	6.43E-02	6.41E-71	7.70E-71	1.20E-71
Ce-141	3.24E+01	8.97E-03	1.08E-02	1.68E-03
Ce-143	1.40E+00	5.31E-07	6.38E-07	9.94E-08
Ce-144	2.84E+02	9.12E-02	1.10E-01	1.71E-02
Pr-143	1.36E+01	2.50E-03	3.00E-03	4.68E-04
Pr-144	1.20E-02	0.00E+00	0.00E+00	0.00E+00
Nd-147	1.11E+01	1.74E-03	2.09E-03	3.25E-04
W-187	9.92E-01	2.12E-08	2.55E-08	3.96E-09
Np-239	2.36E+00	1.45E-05	1.74E-05	2.71E-06

*Note: Cesium isotopes diffusing through the soil to enter the Little Robbins Slough area are assumed to be trapped in the soil.

All other calculations were made according to the methods of Section B4.1 where the above listed pathway values correspond to the following:

Colorado River = Qc/Ai,
Matagorda Bay/Gulf of Mexico = (Qc + Qlrs + Qelrs + Qwc) / Ai,
Little Robins Slough = (Qlrs + Qelrs) / Ai.

Table B4-2: Liquid Dose Pathway Factor Description

U = annual intake of fish, kg/y (note 1)
Ub = annual use factor for shoreline exposure, hr/y
M = dilution factor; all flow rates are normalized to that of the Little Robbins Slough area
F = flow rate of the Little Robbins Slough area, cfs (note 2)
Q(i) = release of nuclide "i" from the reservoir, Ci
N(i) = fractional release of nuclide "i" from the reservoir to a given pathway as listed in Table 4.1
B(i) = bioaccumulation factor for nuclide "i" to a given pathway, (note 3)
[pCi in fish / Kg of fish] / [pCi in water / Kg of water]
D(a,i,j) = dose factor for nuclide "i", organ "j", age "a", mrem/pCi or mrem/hr per pCi/m^2 (note 4)
Y(i) = decay constant for nuclide "i", 1/hour
T(i) = half-life of nuclide "i", days
T = average transit time from release to ingestion of fish by man; or to deposition in sediment, hr (note 5)
Tb = time period during which sediment is exposed to contaminated water, hr.
W = shoreline width factor
R(a,i,j) = dose to organ "j" for a particular release from nuclide "i" and age group "a" (mrem/Ci).

Note 1: Little Robbins Slough area is assumed to contain freshwater fish only while the Colorado River and Matagorda Bay/Gulf of Mexico are assumed to yield saltwater fish and invertebrates as per Regulatory Guide 1.109.

Note 2: The average rainfall over the Little Robbins Slough drainage area results in approximately 14.56 cfs flow rate through the marsh to Intracoastal Waterway which is available to dilute the approximately 3.73 cfs flow into Little Robbins Slough from the relief wells (STP ER Table 2.5-2).

Note 3: Bioaccumulation factors for saltwater fish and invertebrates are taken from Table A-1 of Regulatory Guide 1.109; saltwater values are used with the Colorado River, Matagorda Bay/Gulf of Mexico, and fresh water values for the lakes along Little Robbins Slough.

Note 4: The dose factors for Equation 4.2 are taken from Table E-11 of Regulatory Guide 1.109 whereas the dose factors for Equation 4.3 come form Table E-6 of this Regulatory Guide.

Note 5: The average time between nuclide release to the unrestricted aquatic environment and fish consumption comes from Table D-1 of Regulatory Guide 1.109. No delay is assumed between release and contamination of sediment for Equation 4.3 because the delay between release and soil exposure is likely to be short compared to the half-lives of the nuclides potentially present.

Table B4-3: Liquid Parameter Values for Eq. 4.2 and 4.3

Parameter	Parameter Value				
U	Adult	Teen	Child	Infant	
Colorado River	21	16	6.9	0	Kg/y saltwater fish
	5	3.8	1.7	0	Kg/y saltwater invertebrate
Matagorda Bay/Gulf	21	16	6.9	0	Kg/y saltwater fish
	5	3.8	1.7	0	Kg/y saltwater invertebrate
Little Robbins area	21	16	6.9	0	Kg/y freshwater fish
Ub	Adult	Teen	Child	Infant	
Colorado River	12	67	14	0	hr/y
Matagorda Bay/Gulf	12	67	14	0	hr/y
Little Robbins area	12	67	14	0	hr/y
M					
Colorado River	32.8				
Matagorda Bay/Gulf	328				
Little Robbins area	1.0				
F	18.3 cfs				
N(i)					
Colorado River	values by nuclide "i" and pathway from				
Matagorda Bay/Gulf	Table B4-1.				
Little Robbins area					
T					
fish ingestion	24 hr				
shoreline exposure	0 hr				
Tb	1.31E+05 hr				
W					
Colorado River	0.2				
Matagorda Bay/Gulf	0.5				
Little Robbins area	0.2				
B(i)	nuclide specific form Table A-1, Regulatory Guide 1.109.				
D(a,i,j)	nuclide specific from Table E-11 or E-6, Regulatory Guide 1.109.				

Table B4-4: Particle Depletion and Deposition Factors for Ground Level Releases

Distance (meters)	Depletion	Deposition (1/meter)
200	0.970	1.2E-04
500	0.936	8.0E-05
1000	0.900	5.4E-05
2000	0.860	3.2E-05
3000	0.832	2.6E-05
6000	0.770	1.5E-05
10,000	0.714	9.9E-06
30,000	0.590	4.5E-06
50,000	0.517	3.0E-06
80,000	0.440	2.0E-06

Table B4-5: Gaseous Dose Pathway Factor Description

Factor	Units	Description
Dfl	mrem-(m^2 or m^2) per Ci or mrem/pCi	Ingestion of inhalation factor for "i"th nuclide by age group and organ: Table E-14 through E-20 of Regulatory Guide 1.109.
F	day/Kg(liter)	Stable element transfer coefficient for element "i" from Table E-1 of Regulatory Guide 1.109 for meat of milk as appropriate.
Fg	fraction	Fraction of annual intake of stored vegetation grown locally.
Fl	fraction	Fraction of the annual intake of fresh leafy vegetation grown locally.
Fp	fraction	Fraction of year that cow is on pasture.
Fs	fraction	Fraction of cow feed that is pasture grass while the cow is on pasture.
K	pCi-y/uCi-s	Units conversion factor.
K"	hr/yr	Units conversion factor.
Qf	Kg/day	Consumption rate for cattle.
R	fraction	Fraction of activity deposited on vegetation relative to the total deposition.
R(a,i,j)	varies	Pathway dose factor for nuclide "i", organ "j", and age group "a".
Sf	fraction	Shielding of transmission factor; 1.0 for no shield, 0.0 for fully shielded.
T	sec	Exposure duration.
Tf	sec	Transport time from cow to receptor.
Th	sec	Transport time from harvest to cow or to receptor.
Tl	sec	Average time between harvest of leafy vegetation and its consumption.
Uap	Kg(liter)/y	Human consumption rate for fresh foods.
Uaps	Kg(liter)/y	Human consumption rate for stored foods.
Yi	$1/sec_2$	Decay constant for nuclide "i".
Yp	Kg /m^2	Agricultural productivity by unit area of pasture feed grass.
Ys	Kg/m^2	Agricultural productivity by unit area of stored feed.
Yv	Kg/m^2	Vegetation area density.
Yw	1/sec	Removal rate constant for activity on plant surfaces.
Br	m^2/yr	Breathing rate.

Table B4-6: Gaseous Parameter Values for Eq. 4.14 to 4.19

PARAMETER	PATHWAY MILK	MEAT	VEGETATION	GROUND PLANE
R (fraction) iodine:	0.5	0.5	0.5	0.5
particle:	0.2	0.2	0.2	1.0
F (days/liter)	Table E-1	Table E-1	---	---
Uap (kg or liters/yr)				
infant	330	0	0	---
child	330	41	26	---
teen	400	65	42	---
adult	310	110	64	---
Dfl (mrem/pCi or mrem-m^2/pCi-h)	Table E-11 to E-14	Table E-11 to E-14	Table E-11 to E-14	Table E-6
Yp (kg/m^2)	0.7	0.7	---	---
Ys (kg/m^2)	2.0	2.0	---	---
Yv (kg/m^2)	---	---	2.0	---
Yw (l/sec)	5.73E-07	5.73E-07	5.73E-07	---
Tf (sec)	1.73E05	1.73E06	---	---
Th (sec)	7.78E06	7.78E06	5.18E06	---
T (sec)	---	---	---	4.73E08
Tl (sec)	---	---	8.6E04	---
Qf (kg/day)	50	50	---	---
Fl (fraction)	---	---	1.0	---
Fg (fraction)	---	---	0.76	---
Fp (fraction)	0.91	0.91	0.91	---
Fs (fraction)	1.0	1.0	1.0	---
Uaps (stored kg/yr)				
infant	---	---	0	---
child	---	---	520	---
teen	---	---	630	---
adult	---	---	520	---
K (pCi-yr/uCi-sec)	3.17E04	3.17E04	---	---
K" (hr/yr)	---	---	---	8760
Sf (fraction) for Technical Specification 3.11.2.1				1.0
for Technical Specification 3.11.2.2				0.7

Inhalation Pathway

Br (m^3/yr)	
infant	1400
child	3700
teen	8000
adult	8000
Dfl (mrem/pCi)	Tables E-7 to E-10

All values and table references are from Regulatory Guide 1.109.

Table B4-7: Pathway Dose Factors

NOTES:

Liquid Pathway Dose Factors

This table consists of two sections. The first is a listing of pathway dose factors by nuclide and pathway for liquid effluents. These factors were calculated using the equations and methods of Part B, Section 4.2 of the ODCM. The product of a particular factor and a quantity of activity (Ci) released to the reservoir will yield the dose (mrem) to an individual at each of the locations and for each of the pathways specified.

The liquid dose factors for cesium isotopes were set to zero for pathways associated with relief well discharges into the Little Robbins Slough area in order to conform with the assumptions made in the FSAR, Appendix 11.A, regarding the transportability of cesium in soil.

The units for all liquid dose factors are (mrem/Ci).

Gaseous Pathway Dose Factors

The second section of this table consists of a listing by nuclide of the gaseous pathway dose factors. These factors were calculated using a code similar to GASPAR and are based on the methods of Regulatory Guide 1.109.

The units used for noble gases, tritium, and all nuclides for the inhalation pathway are (mrem-m^3 / Ci-sec). The product of this pathway dose factor, the release (Ci), and the appropriate depleted X/Q (sec /m^3) or X/Q (for noble gases and tritium) yields the dose in (mrem).

The units used for all other nuclides in all other pathways are (mrem-m^2 /Ci). The product of this pathway dose factor, the release rate, and the appropriate D/Q yields the dose (mrem) over the release period.

Table B4-7 Continued

INDIVIDUAL DOSE FACTORS FOR LIQUID EFFLUENTS -- FOR ISOTOPE : H3

FOR PATHWAY: FRESHWATER FISH - LITTLE ROBBINS SLOUGH

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	4.87E-06	4.87E-06	0.00E+00	4.87E-06	4.87E-06	4.87E-06	4.87E-06
TEEN:	3.74E-06	3.74E-06	0.00E+00	3.74E-06	3.74E-06	3.74E-06	3.74E-06
CHILD:	3.09E-06	3.09E-06	0.00E+00	3.09E-06	3.09E-06	3.09E-06	3.09E-06
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	7.93E-07	7.93E-07	0.00E+00	7.93E-07	7.93E-07	7.93E-07	7.93E-07
TEEN:	6.10E-07	6.10E-07	0.00E+00	6.10E-07	6.10E-07	6.10E-07	6.10E-07
CHILD:	5.04E-07	5.04E-07	0.00E+00	5.04E-07	5.04E-07	5.04E-07	5.04E-07
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	9.53E-08	9.53E-08	0.00E+00	9.53E-08	9.53E-08	9.53E-08	9.53E-08
TEEN:	7.33E-08	7.33E-08	0.00E+00	7.33E-08	7.33E-08	7.33E-08	7.33E-08
CHILD:	6.05E-08	6.05E-08	0.00E+00	6.05E-08	6.05E-08	6.05E-08	6.05E-08
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	1.95E-07	1.95E-07	0.00E+00	1.95E-07	1.95E-07	1.95E-07	1.95E-07
TEEN:	1.38E-07	1.38E-07	0.00E+00	1.38E-07	1.38E-07	1.38E-07	1.38E-07
CHILD:	1.28E-07	1.28E-07	0.00E+00	1.28E-07	1.28E-07	1.28E-07	1.28E-07
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	2.34E-08	2.34E-08	0.00E+00	2.34E-08	2.34E-08	2.34E-08	2.34E-08
TEEN:	1.66E-08	1.66E-08	0.00E+00	1.66E-08	1.66E-08	1.66E-08	1.66E-08
CHILD:	1.54E-08	1.54E-08	0.00E+00	1.54E-08	1.54E-08	1.54E-08	1.54E-08
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - LITTLE ROBBINS SLOUGH

	T. BODY	SKIN
ADULT:	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - COLORADO RIVER

	T. BODY	SKIN
ADULT:	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - MATAGORDA BAY / GULF

	T. BODY	SKIN
ADULT:	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00

Table B4-7 Continued

INDIVIDUAL DOSE FACTORS FOR LIQUID EFFLUENTS -- FOR ISOTOPE : C14

FOR PATHWAY: FRESHWATER FISH - LITTLE ROBBINS SLOUGH

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	4.65E-01	4.65E-01	2.33E+00	4.65E-01	4.65E-01	4.65E-01	4.65E-01
TEEN:	5.07E-01	5.07E-01	2.53E+00	5.07E-01	5.07E-01	5.07E-01	5.07E-01
CHILD:	6.51E-01	6.51E-01	3.26E+00	6.51E-01	6.51E-01	6.51E-01	6.51E-01
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	2.96E-02	2.96E-02	1.48E-01	2.96E-02	2.96E-02	2.96E-02	2.96E-02
TEEN:	3.23E-02	3.23E-02	1.61E-01	3.23E-02	3.23E-02	3.23E-02	3.23E-02
CHILD:	4.15E-02	4.15E-02	2.07E-01	4.15E-02	4.15E-02	4.15E-02	4.15E-02
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	3.56E-03	3.56E-03	1.78E-02	3.56E-03	3.56E-03	3.56E-03	3.56E-03
TEEN:	3.88E-03	3.88E-03	1.94E-02	3.88E-03	3.88E-03	3.88E-03	3.88E-03
CHILD:	4.98E-03	4.98E-03	2.49E-02	4.98E-03	4.98E-03	4.98E-03	4.98E-03
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	5.49E-03	5.49E-03	2.74E-02	5.49E-03	5.49E-03	5.49E-03	5.49E-03
TEEN:	5.49E-03	5.49E-03	2.75E-02	5.49E-03	5.49E-03	5.49E-03	5.49E-03
CHILD:	7.95E-03	7.95E-03	3.97E-02	7.95E-03	7.95E-03	7.95E-03	7.95E-03
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	6.59E-04	6.59E-04	3.30E-03	6.59E-04	6.59E-04	6.59E-04	6.59E-04
TEEN:	6.60E-04	6.60E-04	3.30E-03	6.60E-04	6.60E-04	6.60E-04	6.60E-04
CHILD:	9.55E-04	9.55E-04	4.78E-03	9.55E-04	9.55E-04	9.55E-04	9.55E-04
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - LITTLE ROBBINS SLOUGH

	T. BODY	SKIN
ADULT:	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - COLORADO RIVER

	T. BODY	SKIN
ADULT:	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - MATAGORDA BAY / GULF

	T. BODY	SKIN
ADULT:	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00

Table B4-7 Continued

INDIVIDUAL DOSE FACTORS FOR LIQUID EFFLUENTS -- FOR ISOTOPE : NA24

FOR PATHWAY: FRESHWATER FISH - LITTLE ROBBINS SLOUGH

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	5.90E-13	5.90E-13	5.90E-13	5.90E-13	5.90E-13	5.90E-13	5.90E-13
TEEN:	6.08E-13	6.08E-13	6.08E-13	6.08E-13	6.08E-13	6.08E-13	6.08E-13
CHILD:	6.61E-13	6.61E-13	6.61E-13	6.61E-13	6.61E-13	6.61E-13	6.61E-13
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	6.45E-17	6.45E-17	6.45E-17	6.45E-17	6.45E-17	6.45E-17	6.45E-17
TEEN:	6.65E-17	6.65E-17	6.65E-17	6.65E-17	6.65E-17	6.65E-17	6.65E-17
CHILD:	7.23E-17	7.23E-17	7.23E-17	7.23E-17	7.23E-17	7.23E-17	7.23E-17
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	7.75E-18	7.75E-18	7.75E-18	7.75E-18	7.75E-18	7.75E-18	7.75E-18
TEEN:	7.99E-18	7.99E-18	7.99E-18	7.99E-18	7.99E-18	7.99E-18	7.99E-18
CHILD:	8.69E-18	8.69E-18	8.69E-18	8.69E-18	8.69E-18	8.69E-18	8.69E-18
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	4.36E-17	4.36E-17	4.36E-17	4.36E-17	4.36E-17	4.36E-17	4.36E-17
TEEN:	4.12E-17	4.12E-17	4.12E-17	4.12E-17	4.12E-17	4.12E-17	4.12E-17
CHILD:	5.05E-17	5.05E-17	5.05E-17	5.05E-17	5.05E-17	5.05E-17	5.05E-17
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	5.24E-18	5.24E-18	5.24E-18	5.24E-18	5.24E-18	5.24E-18	5.24E-18
TEEN:	4.96E-18	4.96E-18	4.96E-18	4.96E-18	4.96E-18	4.96E-18	4.96E-18
CHILD:	6.07E-18	6.07E-18	6.07E-18	6.07E-18	6.07E-18	6.07E-18	6.07E-18
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - LITTLE ROBBINS SLOUGH

	T. BODY	SKIN
ADULT:	1.88E-15	2.18E-15
TEEN:	1.05E-14	1.22E-14
CHILD:	2.19E-15	2.54E-15
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - COLORADO RIVER

	T. BODY	SKIN
ADULT:	3.06E-16	3.55E-16
TEEN:	1.71E-15	1.98E-15
CHILD:	3.57E-16	4.15E-16
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - MATAGORDA BAY / GULF

	T. BODY	SKIN
ADULT:	9.21E-17	1.07E-16
TEEN:	5.14E-16	5.97E-16
CHILD:	1.07E-16	1.25E-16
INFANT:	0.00E+00	0.00E+00

Table B4-7 Continued

INDIVIDUAL DOSE FACTORS FOR LIQUID EFFLUENTS -- FOR ISOTOPE : P32

FOR PATHWAY: FRESHWATER FISH - LITTLE ROBBINS SLOUGH

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	4.59E-01	1.34E+00	1.19E+01	7.39E-01	0.00E+00	0.00E+00	0.00E+00
TEEN:	5.02E-01	1.09E+00	1.29E+01	8.02E-01	0.00E+00	0.00E+00	0.00E+00
CHILD:	6.43E-01	4.61E-01	1.67E+01	7.81E-01	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	2.17E-02	6.32E-02	5.62E-01	3.50E-02	0.00E+00	0.00E+00	0.00E+00
TEEN:	2.38E-02	5.15E-02	6.13E-01	3.80E-02	0.00E+00	0.00E+00	0.00E+00
CHILD:	3.04E-02	2.18E-02	7.90E-01	3.69E-02	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	2.61E-03	7.59E-03	6.75E-02	4.20E-03	0.00E+00	0.00E+00	0.00E+00
TEEN:	2.85E-03	6.18E-03	7.36E-02	4.56E-03	0.00E+00	0.00E+00	0.00E+00
CHILD:	3.66E-03	2.62E-03	9.48E-02	4.44E-03	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	5.35E-03	1.56E-02	1.38E-01	8.61E-03	0.00E+00	0.00E+00	0.00E+00
TEEN:	5.37E-03	1.17E-02	1.39E-01	8.59E-03	0.00E+00	0.00E+00	0.00E+00
CHILD:	7.76E-03	5.56E-03	2.01E-01	9.42E-03	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	6.43E-04	1.87E-03	1.66E-02	1.03E-03	0.00E+00	0.00E+00	0.00E+00
TEEN:	6.45E-04	1.40E-03	1.66E-02	1.03E-03	0.00E+00	0.00E+00	0.00E+00
CHILD:	9.32E-04	6.68E-04	2.42E-02	1.13E-03	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - LITTLE ROBBINS SLOUGH

	T. BODY	SKIN
ADULT:	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - COLORADO RIVER

	T. BODY	SKIN
ADULT:	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - MATAGORDA BAY / GULF

	T. BODY	SKIN
ADULT:	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00

Table B4-7 Continued

INDIVIDUAL DOSE FACTORS FOR LIQUID EFFLUENTS -- FOR ISOTOPE : CR51

FOR PATHWAY: FRESHWATER FISH - LITTLE ROBBINS SLOUGH

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	8.97E-07	2.26E-04	0.00E+00	0.00E+00	1.98E-07	5.36E-07	1.19E-06
TEEN:	9.25E-07	1.55E-04	0.00E+00	0.00E+00	2.03E-07	5.14E-07	1.32E-06
CHILD:	9.86E-07	5.23E-05	0.00E+00	0.00E+00	1.50E-07	5.48E-07	1.00E-06
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	2.92E-07	7.34E-05	0.00E+00	0.00E+00	6.43E-08	1.75E-07	3.87E-07
TEEN:	3.01E-07	5.06E-05	0.00E+00	0.00E+00	6.60E-08	1.67E-07	4.30E-07
CHILD:	3.21E-07	1.70E-05	0.00E+00	0.00E+00	4.87E-08	1.78E-07	3.25E-07
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	3.51E-08	8.82E-06	0.00E+00	0.00E+00	7.72E-09	2.10E-08	4.65E-08
TEEN:	3.62E-08	6.08E-06	0.00E+00	0.00E+00	7.92E-09	2.01E-08	5.16E-08
CHILD:	3.85E-08	2.04E-06	0.00E+00	0.00E+00	5.85E-09	2.14E-08	3.91E-08
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	3.48E-07	8.74E-05	0.00E+00	0.00E+00	7.66E-08	2.08E-07	4.61E-07
TEEN:	3.29E-07	5.53E-05	0.00E+00	0.00E+00	7.22E-08	1.83E-07	4.70E-07
CHILD:	3.95E-07	2.10E-05	0.00E+00	0.00E+00	6.00E-08	2.19E-07	4.01E-07
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	4.17E-08	1.05E-05	0.00E+00	0.00E+00	9.20E-09	2.50E-08	5.54E-08
TEEN:	3.95E-08	6.65E-06	0.00E+00	0.00E+00	8.67E-09	2.20E-08	5.65E-08
CHILD:	4.75E-08	2.52E-06	0.00E+00	0.00E+00	7.20E-09	2.64E-08	4.81E-08
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - LITTLE ROBBINS SLOUGH

	T. BODY	SKIN
ADULT:	1.20E-07	1.42E-07
TEEN:	6.72E-07	7.95E-07
CHILD:	1.41E-07	1.66E-07
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - COLORADO RIVER

	T. BODY	SKIN
ADULT:	1.96E-08	2.32E-08
TEEN:	1.09E-07	1.29E-07
CHILD:	2.29E-08	2.70E-08
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - MATAGORDA BAY / GULF

	T. BODY	SKIN
ADULT:	5.88E-09	6.95E-09
TEEN:	3.28E-08	3.88E-08
CHILD:	6.86E-09	8.11E-09
INFANT:	0.00E+00	0.00E+00

Table B4-7 Continued

INDIVIDUAL DOSE FACTORS FOR LIQUID EFFLUENTS -- FOR ISOTOPE : MN54

FOR PATHWAY: FRESHWATER FISH - LITTLE ROBBINS SLOUGH

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	8.17E-03	1.31E-01	0.00E+00	4.28E-02	1.27E-02	0.00E+00	0.00E+00
TEEN:	8.35E-03	8.64E-02	0.00E+00	4.21E-02	1.26E-02	0.00E+00	0.00E+00
CHILD:	8.77E-03	2.76E-02	0.00E+00	3.29E-02	9.24E-03	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	1.83E-03	2.94E-02	0.00E+00	9.58E-03	2.85E-03	0.00E+00	0.00E+00
TEEN:	1.87E-03	1.93E-02	0.00E+00	9.43E-03	2.81E-03	0.00E+00	0.00E+00
CHILD:	1.96E-03	6.19E-03	0.00E+00	7.37E-03	2.07E-03	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	2.19E-04	3.52E-03	0.00E+00	1.15E-03	3.42E-04	0.00E+00	0.00E+00
TEEN:	2.24E-04	2.32E-03	0.00E+00	1.13E-03	3.37E-04	0.00E+00	0.00E+00
CHILD:	2.35E-04	7.42E-04	0.00E+00	8.84E-04	2.48E-04	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	3.17E-04	5.08E-03	0.00E+00	1.66E-03	4.94E-04	0.00E+00	0.00E+00
TEEN:	2.97E-04	3.08E-03	0.00E+00	1.50E-03	4.47E-04	0.00E+00	0.00E+00
CHILD:	3.52E-04	1.11E-03	0.00E+00	1.32E-03	3.70E-04	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	3.79E-05	6.09E-04	0.00E+00	1.99E-04	5.92E-05	0.00E+00	0.00E+00
TEEN:	3.56E-05	3.69E-04	0.00E+00	1.80E-04	5.36E-05	0.00E+00	0.00E+00
CHILD:	4.22E-05	1.33E-04	0.00E+00	1.58E-04	4.44E-05	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - LITTLE ROBBINS SLOUGH

	T. BODY	SKIN
ADULT:	4.86E-04	5.70E-04
TEEN:	2.71E-03	3.18E-03
CHILD:	5.67E-04	6.65E-04
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - COLORADO RIVER

	T. BODY	SKIN
ADULT:	7.91E-05	9.27E-05
TEEN:	4.42E-04	5.18E-04
CHILD:	9.23E-05	1.08E-04
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - MATAGORDA BAY / GULF

	T. BODY	SKIN
ADULT:	2.37E-05	2.78E-05
TEEN:	1.32E-04	1.55E-04
CHILD:	2.76E-05	3.24E-05
INFANT:	0.00E+00	0.00E+00

Table B4-7 Continued

INDIVIDUAL DOSE FACTORS FOR LIQUID EFFLUENTS -- FOR ISOTOPE : MN56

FOR PATHWAY: FRESHWATER FISH - LITTLE ROBBINS SLOUGH

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	6.84E-50	1.23E-47	0.00E+00	3.86E-49	4.90E-49	0.00E+00	0.00E+00
TEEN:	7.18E-50	2.66E-47	0.00E+00	4.04E-49	5.11E-49	0.00E+00	0.00E+00
CHILD:	8.31E-50	5.33E-47	0.00E+00	3.68E-49	4.45E-49	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	1.53E-50	2.76E-48	0.00E+00	8.64E-50	1.10E-49	0.00E+00	0.00E+00
TEEN:	1.61E-50	5.95E-48	0.00E+00	9.04E-50	1.14E-49	0.00E+00	0.00E+00
CHILD:	1.86E-50	1.19E-47	0.00E+00	8.24E-50	9.97E-50	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	1.84E-51	3.32E-49	0.00E+00	1.04E-50	1.32E-50	0.00E+00	0.00E+00
TEEN:	1.94E-51	7.16E-49	0.00E+00	1.09E-50	1.38E-50	0.00E+00	0.00E+00
CHILD:	2.24E-51	1.44E-48	0.00E+00	9.92E-51	1.20E-50	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	2.65E-51	4.77E-49	0.00E+00	1.50E-50	1.90E-50	0.00E+00	0.00E+00
TEEN:	2.56E-51	9.47E-49	0.00E+00	1.44E-50	1.82E-50	0.00E+00	0.00E+00
CHILD:	3.33E-51	2.14E-48	0.00E+00	1.48E-50	1.79E-50	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	3.19E-52	5.75E-50	0.00E+00	1.80E-51	2.29E-51	0.00E+00	0.00E+00
TEEN:	3.08E-52	1.14E-49	0.00E+00	1.73E-51	2.19E-51	0.00E+00	0.00E+00
CHILD:	4.01E-52	2.58E-49	0.00E+00	1.78E-51	2.15E-51	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - LITTLE ROBBINS SLOUGH

	T. BODY	SKIN
ADULT:	7.20E-50	8.51E-50
TEEN:	4.02E-49	4.75E-49
CHILD:	8.41E-50	9.93E-50
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - COLORADO RIVER

	T. BODY	SKIN
ADULT:	1.17E-50	1.39E-50
TEEN:	6.55E-50	7.74E-50
CHILD:	1.37E-50	1.62E-50
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - MATAGORDA BAY / GULF

	T. BODY	SKIN
ADULT:	3.53E-51	4.17E-51
TEEN:	1.97E-50	2.33E-50
CHILD:	4.12E-51	4.87E-51
INFANT:	0.00E+00	0.00E+00

Table B4-7 Continued

INDIVIDUAL DOSE FACTORS FOR LIQUID EFFLUENTS -- FOR ISOTOPE : FE55

FOR PATHWAY: FRESHWATER FISH - LITTLE ROBBINS SLOUGH

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	2.59E-03	6.37E-03	1.61E-02	1.11E-02	0.00E+00	0.00E+00	6.19E-03
TEEN:	2.78E-03	5.16E-03	1.68E-02	1.19E-02	0.00E+00	0.00E+00	7.56E-03
CHILD:	3.63E-03	2.17E-03	2.21E-02	1.17E-02	0.00E+00	0.00E+00	6.62E-03
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	1.27E-02	3.12E-02	7.87E-02	5.44E-02	0.00E+00	0.00E+00	3.03E-02
TEEN:	1.36E-02	2.53E-02	8.24E-02	5.84E-02	0.00E+00	0.00E+00	3.71E-02
CHILD:	1.78E-02	1.06E-02	1.08E-01	5.73E-02	0.00E+00	0.00E+00	3.24E-02
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	1.52E-03	3.75E-03	9.45E-03	6.53E-03	0.00E+00	0.00E+00	3.64E-03
TEEN:	1.64E-03	3.04E-03	9.90E-03	7.02E-03	0.00E+00	0.00E+00	4.45E-03
CHILD:	2.14E-03	1.28E-03	1.30E-02	6.89E-03	0.00E+00	0.00E+00	3.90E-03
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	2.01E-02	4.95E-02	1.25E-01	8.63E-02	0.00E+00	0.00E+00	4.81E-02
TEEN:	1.99E-02	3.69E-02	1.20E-01	8.5[illegible]-02	0.00E+00	0.00E+00	5.40E-02
CHILD:	2.92E-02	1.74E-02	1.78E-01	9.4[illegible]-02	0.00E+00	0.00E+00	5.33E-02
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	2.42E-03	5.95E-03	1.50E-02	1.04E-02	0.00E+00	0.00E+00	5.78E-03
TEEN:	2.39E-03	4.43E-03	1.44E-02	1.02E-02	0.00E+00	0.00E+00	6.49E-03
CHILD:	3.51E-03	2.10E-03	2.13E-02	1.13E-02	0.00E+00	0.00E+00	6.40E-03
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - LITTLE ROBBINS SLOUGH

	T. BODY	SKIN
ADULT:	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - COLORADO RIVER

	T. BODY	SKIN
ADULT:	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - MATAGORDA BAY / GULF

	T. BODY	SKIN
ADULT:	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00

Table B4-7 Continued

INDIVIDUAL DOSE FACTORS FOR LIQUID EFFLUENTS -- FOR ISOTOPE : FE59

FOR PATHWAY: FRESHWATER FISH - LITTLE ROBBINS SLOUGH

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	1.23E-03	1.07E-02	1.36E-03	3.21E-03	0.00E+00	0.00E+00	8.96E-04
TEEN:	1.27E-03	7.76E-03	1.41E-03	3.28E-03	0.00E+00	0.00E+00	1.04E-03
CHILD:	1.37E-03	2.87E-03	1.70E-03	2.76E-03	0.00E+00	0.00E+00	8.00E-04
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	6.00E-03	5.22E-02	6.66E-03	1.57E-02	0.00E+00	0.00E+00	4.37E-03
TEEN:	6.19E-03	3.79E-02	6.86E-03	1.60E-02	0.00E+00	0.00E+00	5.05E-03
CHILD:	6.71E-03	1.40E-02	8.32E-03	1.35E-02	0.00E+00	0.00E+00	3.90E-03
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	7.20E-04	6.26E-03	7.99E-04	1.88E-03	0.00E+00	0.00E+00	5.25E-04
TEEN:	7.42E-04	4.55E-03	8.24E-04	1.92E-03	0.00E+00	0.00E+00	6.06E-04
CHILD:	8.05E-04	1.68E-03	9.99E-04	1.62E-03	0.00E+00	0.00E+00	4.68E-04
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	9.53E-03	8.28E-02	1.06E-02	2.49E-02	0.00E+00	0.00E+00	6.94E-03
TEEN:	9.02E-03	5.53E-02	1.00E-02	2.34E-02	0.00E+00	0.00E+00	7.37E-03
CHILD:	1.10E-02	2.30E-02	1.37E-02	2.21E-02	0.00E+00	0.00E+00	6.41E-03
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	1.14E-03	9.94E-03	1.27E-03	2.98E-03	0.00E+00	0.00E+00	8.33E-04
TEEN:	1.08E-03	6.63E-03	1.20E-03	2.80E-03	0.00E+00	0.00E+00	8.84E-04
CHILD:	1.32E-03	2.76E-03	1.64E-03	2.65E-03	0.00E+00	0.00E+00	7.69E-04
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - LITTLE ROBBINS SLOUGH

	T. BODY	SKIN
ADULT:	1.32E-05	1.55E-05
TEEN:	7.35E-05	8.64E-05
CHILD:	1.54E-05	1.81E-05
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - COLORADO RIVER

	T. BODY	SKIN
ADULT:	2.14E-06	2.52E-06
TEEN:	1.20E-05	1.41E-05
CHILD:	2.50E-06	2.94E-06
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - MATAGORDA BAY / GULF

	T. BODY	SKIN
ADULT:	6.43E-07	7.55E-07
TEEN:	3.59E-06	4.22E-06
CHILD:	7.50E-07	8.81E-07
INFANT:	0.00E+00	0.00E+00

Table B4-7 Continued

INDIVIDUAL DOSE FACTORS FOR LIQUID EFFLUENTS -- FOR ISOTOPE : CO58

FOR PATHWAY: FRESHWATER FISH - LITTLE ROBBINS SLOUGH

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	4.42E-04	3.99E-03	0.00E+00	1.97E-04	0.00E+00	0.00E+00	0.00E+00
TEEN:	4.51E-04	2.70E-03	0.00E+00	1.96E-04	0.00E+00	0.00E+00	0.00E+00
CHILD:	4.79E-04	9.12E-04	0.00E+00	1.56E-04	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	1.44E-04	1.30E-03	0.00E+00	6.42E-05	0.00E+00	0.00E+00	0.00E+00
TEEN:	1.47E-04	8.79E-04	0.00E+00	6.38E-05	0.00E+00	0.00E+00	0.00E+00
CHILD:	1.56E-04	2.97E-04	0.00E+00	5.09E-05	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	1.73E-05	1.57E-04	0.00E+00	7.72E-06	0.00E+00	0.00E+00	0.00E+00
TEEN:	1.77E-05	1.06E-04	0.00E+00	7.68E-06	0.00E+00	0.00E+00	0.00E+00
CHILD:	1.88E-05	3.58E-05	0.00E+00	6.13E-06	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	3.42E-04	3.10E-03	0.00E+00	1.53E-04	0.00E+00	0.00E+00	0.00E+00
TEEN:	3.22E-04	1.92E-03	0.00E+00	1.40E-04	0.00E+00	0.00E+00	0.00E+00
CHILD:	3.84E-04	7.32E-04	0.00E+00	1.26E-04	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	4.12E-05	3.73E-04	0.00E+00	1.84E-05	0.00E+00	0.00E+00	0.00E+00
TEEN:	3.87E-05	2.32E-04	0.00E+00	1.68E-05	0.00E+00	0.00E+00	0.00E+00
CHILD:	4.62E-05	8.81E-05	0.00E+00	1.51E-05	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - LITTLE ROBBINS SLOUGH

	T. BODY	SKIN
ADULT:	3.02E-05	2.91E-05
TEEN:	1.69E-04	1.98E-04
CHILD:	3.53E-05	4.13E-05
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - COLORADO RIVER

	T. BODY	SKIN
ADULT:	4.92E-06	5.77E-06
TEEN:	2.75E-05	3.22E-05
CHILD:	5.75E-06	6.73E-06
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - MATAGORDA BAY / GULF

	T. BODY	SKIN
ADULT:	1.48E-06	1.74E-06
TEEN:	8.27E-06	9.69E-06
CHILD:	1.73E-06	2.03E-06
INFANT:	0.00E+00	0.00E+00

Table B4-7 Continued

INDIVIDUAL DOSE FACTORS FOR LIQUID EFFLUENTS -- FOR ISOTOPE : CO60

FOR PATHWAY: FRESHWATER FISH - LITTLE ROBBINS SLOUGH

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	2.05E-02	1.75E-01	0.00E+00	9.32E-03	0.00E+00	0.00E+00	0.00E+00
TEEN:	2.10E-02	1.21E-01	0.00E+00	9.32E-03	0.00E+00	0.00E+00	0.00E+00
CHILD:	2.23E-02	4.19E-02	0.00E+00	7.57E-03	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	6.70E-03	5.71E-02	0.00E+00	3.04E-03	0.00E+00	0.00E+00	0.00E+00
TEEN:	6.85E-03	3.96E-02	0.00E+00	3.04E-03	0.00E+00	0.00E+00	0.00E+00
CHILD:	7.28E-03	1.37E-02	0.00E+00	2.47E-03	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	8.04E-04	6.85E-03	0.00E+00	3.65E-04	0.00E+00	0.00E+00	0.00E+00
TEEN:	8.22E-04	4.75E-03	0.00E+00	3.65E-04	0.00E+00	0.00E+00	0.00E+00
CHILD:	8.74E-04	1.64E-03	0.00E+00	2.96E-04	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	1.60E-02	1.36E-01	0.00E+00	7.23E-03	0.00E+00	0.00E+00	0.00E+00
TEEN:	1.50E-02	8.66E-02	0.00E+00	6.65E-03	0.00E+00	0.00E+00	0.00E+00
CHILD:	1.79E-02	3.37E-02	0.00E+00	6.08E-03	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	1.92E-03	1.63E-02	0.00E+00	8.68E-04	0.00E+00	0.00E+00	0.00E+00
TEEN:	1.80E-03	1.04E-02	0.00E+00	7.98E-04	0.00E+00	0.00E+00	0.00E+00
CHILD:	2.15E-03	4.04E-03	0.00E+00	7.30E-04	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - LITTLE ROBBINS SLOUGH

	T. BODY	SKIN
ADULT:	2.80E-02	3.30E-02
TEEN:	1.56E-01	1.84E-01
CHILD:	3.27E-02	3.85E-02
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - COLORADO RIVER

	T. BODY	SKIN
ADULT:	4.57E-03	5.38E-03
TEEN:	2.55E-02	3.00E-02
CHILD:	5.33E-03	6.27E-03
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - MATAGORDA BAY / GULF

	T. BODY	SKIN
ADULT:	1.37E-03	1.61E-03
TEEN:	7.66E-03	9.01E-03
CHILD:	1.60E-03	1.88E-03
INFANT:	0.00E+00	0.00E+00

Table B4-7 Continued

INDIVIDUAL DOSE FACTORS FOR LIQUID EFFLUENTS -- FOR ISOTOPE : NI63

FOR PATHWAY: FRESHWATER FISH - LITTLE ROBBINS SLOUGH

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	7.37E-02	3.18E-02	2.20E+00	1.52E-01	0.00E+00	0.00E+00	0.00E+00
TEEN:	7.73E-02	2.56E-02	2.28E+00	1.61E-01	0.00E+00	0.00E+00	0.00E+00
CHILD:	1.02E-01	1.08E-02	2.99E+00	1.60E-01	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	1.20E-02	5.17E-03	3.58E-01	2.48E-02	0.00E+00	0.00E+00	0.00E+00
TEEN:	1.26E-02	4.17E-03	3.71E-01	2.62E-02	0.00E+00	0.00E+00	0.00E+00
CHILD:	1.65E-02	1.75E-03	4.86E-01	2.60E-02	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	1.44E-03	6.21E-04	4.30E-02	2.98E-03	0.00E+00	0.00E+00	0.00E+00
TEEN:	1.51E-03	5.01E-04	4.46E-02	3.15E-03	0.00E+00	0.00E+00	0.00E+00
CHILD:	1.99E-03	2.11E-04	5.84E-02	3.13E-03	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	7.14E-03	3.08E-03	2.13E-01	1.48E-02	0.00E+00	0.00E+00	0.00E+00
TEEN:	6.88E-03	2.28E-03	2.03E-01	1.43E-02	0.00E+00	0.00E+00	0.00E+00
CHILD:	1.02E-02	1.08E-03	3.00E-01	1.60E-02	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	8.58E-04	3.70E-04	2.56E-02	1.77E-03	0.00E+00	0.00E+00	0.00E+00
TEEN:	8.26E-04	2.74E-04	2.44E-02	1.72E-03	0.00E+00	0.00E+00	0.00E+00
CHILD:	1.22E-03	1.30E-04	3.60E-02	1.93E-03	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - LITTLE ROBBINS SLOUGH

	T. BODY	SKIN
ADULT:	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - COLORADO RIVER

	T. BODY	SKIN
ADULT:	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - MATAGORDA BAY / GULF

	T. BODY	SKIN
ADULT:	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00

Table B4-7 Continued

INDIVIDUAL DOSE FACTORS FOR LIQUID EFFLUENTS -- FOR ISOTOPE : NI65

FOR PATHWAY: FRESHWATER FISH - LITTLE ROBBINS SLOUGH

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	2.98E-51	1.66E-49	5.03E-50	6.54E-51	0.00E+00	0.00E+00	0.00E+00
TEEN:	3.17E-51	3.77E-49	5.44E-50	6.95E-51	0.00E+00	0.00E+00	0.00E+00
CHILD:	3.82E-51	8.02E-49	6.95E-50	6.54E-51	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	4.85E-52	2.70E-50	8.18E-51	1.06E-51	0.00E+00	0.00E+00	0.00E+00
TEEN:	5.15E-52	6.13E-50	8.84E-51	1.13E-51	0.00E+00	0.00E+00	0.00E+00
CHILD:	6.21E-52	1.30E-49	1.13E-50	1.06E-51	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	5.83E-53	3.24E-51	9.84E-52	1.28E-52	0.00E+00	0.00E+00	0.00E+00
TEEN:	6.19E-53	7.37E-51	1.06E-51	1.36E-52	0.00E+00	0.00E+00	0.00E+00
CHILD:	7.47E-53	1.57E-50	1.36E-51	1.28E-52	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	2.89E-52	1.61E-50	4.87E-51	6.33E-52	0.00E+00	0.00E+00	0.00E+00
TEEN:	2.82E-52	3.35E-50	4.84E-51	6.18E-52	0.00E+00	0.00E+00	0.00E+00
CHILD:	3.83E-52	8.03E-50	6.96E-51	6.55E-52	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	3.47E-53	1.93E-51	5.86E-52	7.61E-53	0.00E+00	0.00E+00	0.00E+00
TEEN:	3.39E-53	4.03E-51	5.82E-52	7.43E-53	0.00E+00	0.00E+00	0.00E+00
CHILD:	4.60E-53	9.66E-51	8.37E-52	7.88E-53	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - LITTLE ROBBINS SLOUGH

	T. BODY	SKIN
ADULT:	3.11E-51	3.61E-51
TEEN:	1.74E-50	2.02E-50
CHILD:	3.63E-51	4.22E-51
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - COLORADO RIVER

	T. BODY	SKIN
ADULT:	5.06E-52	5.88E-52
TEEN:	2.82E-51	3.28E-51
CHILD:	5.90E-52	6.86E-52
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - MATAGORDA BAY / GULF

	T. BODY	SKIN
ADULT:	1.52E-52	1.77E-52
TEEN:	8.49E-52	9.87E-52
CHILD:	1.77E-52	2.06E-52
INFANT:	0.00E+00	0.00E+00

Table B4-7 Continued

INDIVIDUAL DOSE FACTORS FOR LIQUID EFFLUENTS -- FOR ISOTOPE : CU64

FOR PATHWAY: FRESHWATER FISH - LITTLE ROBBINS SLOUGH

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	2.77E-16	5.04E-14	0.00E+00	5.91E-16	1.49E-15	0.00E+00	0.00E+00
TEEN:	2.92E-16	4.82E-14	0.00E+00	6.22E-16	1.57E-15	0.00E+00	0.00E+00
CHILD:	3.45E-16	2.68E-14	0.00E+00	5.71E-16	1.38E-15	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	6.05E-16	1.10E-13	0.00E+00	1.29E-15	3.25E-15	0.00E+00	0.00E+00
TEEN:	6.38E-16	1.05E-13	0.00E+00	1.36E-15	3.43E-15	0.00E+00	0.00E+00
CHILD:	7.52E-16	5.84E-14	0.00E+00	1.25E-15	3.01E-15	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	7.27E-17	1.32E-14	0.00E+00	1.55E-16	3.91E-16	0.00E+00	0.00E+00
TEEN:	7.67E-17	1.26E-14	0.00E+00	1.63E-16	4.12E-16	0.00E+00	0.00E+00
CHILD:	9.05E-17	7.03E-15	0.00E+00	1.50E-16	3.62E-16	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	3.65E-16	6.63E-14	0.00E+00	7.78E-16	1.96E-15	0.00E+00	0.00E+00
TEEN:	3.54E-16	5.83E-14	0.00E+00	7.52E-16	1.90E-15	0.00E+00	0.00E+00
CHILD:	4.70E-16	3.65E-14	0.00E+00	7.78E-16	1.88E-15	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	4.39E-17	7.98E-15	0.00E+00	9.36E-17	2.36E-16	0.00E+00	0.00E+00
TEEN:	4.26E-17	7.02E-15	0.00E+00	9.05E-17	2.29E-16	0.00E+00	0.00E+00
CHILD:	5.65E-17	4.39E-15	0.00E+00	9.36E-17	2.26E-16	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - LITTLE ROBBINS SLOUGH

	T. BODY	SKIN
ADULT:	4.77E-18	5.40E-18
TEEN:	2.66E-17	3.02E-17
CHILD:	5.56E-18	6.30E-18
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - COLORADO RIVER

	T. BODY	SKIN
ADULT:	7.76E-19	8.79E-19
TEEN:	4.33E-18	4.91E-18
CHILD:	9.05E-19	1.03E-18
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - MATAGORDA BAY / GULF

	T. BODY	SKIN
ADULT:	2.33E-19	2.64E-19
TEEN:	1.30E-18	1.48E-18
CHILD:	2.72E-19	3.08E-19
INFANT:	0.00E+00	0.00E+00

Table B4-7 Continued

INDIVIDUAL DOSE FACTORS FOR LIQUID EFFLUENTS -- FOR ISOTOPE : ZN65

FOR PATHWAY: FRESHWATER FISH - LITTLE ROBBINS SLOUGH

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	2.59E-01	3.61E-01	1.80E-01	5.74E-01	3.84E-01	0.00E+00	0.00E+00
TEEN:	2.65E-01	2.40E-01	1.64E-01	5.68E-01	3.63E-01	0.00E+00	0.00E+00
CHILD:	2.78E-01	7.85E-02	1.68E-01	4.71E-01	2.82E-01	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	4.23E-02	5.90E-02	2.94E-02	9.36E-02	6.26E-02	0.00E+00	0.00E+00
TEEN:	4.32E-02	3.92E-02	2.67E-02	9.26E-02	5.93E-02	0.00E+00	0.00E+00
CHILD:	4.53E-02	1.28E-02	2.74E-02	7.69E-02	4.59E-02	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	5.09E-03	7.09E-03	3.54E-03	1.13E-02	7.53E-03	0.00E+00	0.00E+00
TEEN:	5.19E-03	4.72E-03	3.21E-03	1.11E-02	7.13E-03	0.00E+00	0.00E+00
CHILD:	5.45E-03	1.54E-03	3.29E-03	9.24E-03	5.52E-03	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	2.52E-01	3.51E-01	1.75E-01	5.57E-01	3.73E-01	0.00E+00	0.00E+00
TEEN:	2.36E-01	2.15E-01	1.46E-01	5.07E-01	3.24E-01	0.00E+00	0.00E+00
CHILD:	2.79E-01	7.89E-02	1.69E-01	4.74E-01	2.83E-01	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	3.03E-02	4.22E-02	2.11E-02	6.70E-02	4.48E-02	0.00E+00	0.00E+00
TEEN:	2.84E-02	2.58E-02	1.75E-02	6.09E-02	3.90E-02	0.00E+00	0.00E+00
CHILD:	3.36E-02	9.48E-03	2.03E-02	5.69E-02	3.40E-02	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - LITTLE ROBBINS SLOUGH

	T. BODY	SKIN
ADULT:	2.08E-04	2.39E-04
TEEN:	1.16E-03	1.34E-03
CHILD:	2.43E-04	2.79E-04
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - COLORADO RIVER

	T. BODY	SKIN
ADULT:	3.40E-05	3.91E-05
TEEN:	1.90E-04	2.18E-04
CHILD:	3.96E-05	4.56E-05
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - MATAGORDA BAY / GULF

	T. BODY	SKIN
ADULT:	1.02E-05	1.17E-05
TEEN:	5.70E-05	6.55E-05
CHILD:	1.19E-05	1.37E-05
INFANT:	0.00E+00	0.00E+00

Table B4-7 Continued

INDIVIDUAL DOSE FACTORS FOR LIQUID EFFLUENTS -- FOR ISOTOPE : ZN69

FOR PATHWAY: FRESHWATER FISH - LITTLE ROBBINS SLOUGH

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - LITTLE ROBBINS SLOUGH

	T. BODY	SKIN
ADULT:	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - COLORADO RIVER

	T. BODY	SKIN
ADULT:	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - MATAGORDA BAY / GULF

	T. BODY	SKIN
ADULT:	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00

Table B4-7 Continued

INDIVIDUAL DOSE FACTORS FOR LIQUID EFFLUENTS -- FOR ISOTOPE : BR83

FOR PATHWAY: FRESHWATER FISH - LITTLE ROBBINS SLOUGH

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	6.99E-53	1.01E-52	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	7.60E-53	1.32E-69	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	9.76E-53	5.71E-70	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	4.08E-58	5.87E-58	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	4.44E-58	7.73E-75	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	5.70E-58	3.33E-75	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	4.89E-59	7.05E-59	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	5.32E-59	9.28E-76	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	6.84E-59	4.00E-76	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	2.01E-56	2.89E-56	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	2.01E-56	3.49E-73	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	2.90E-56	1.70E-73	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	2.41E-57	3.47E-57	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	2.41E-57	4.19E-74	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	3.48E-57	2.04E-74	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - LITTLE ROBBINS SLOUGH

	T. BODY	SKIN
ADULT:	3.17E-55	4.61E-55
TEEN:	1.77E-54	2.57E-54
CHILD:	3.70E-55	5.38E-55
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - COLORADO RIVER

	T. BODY	SKIN
ADULT:	5.19E-56	7.54E-56
TEEN:	2.90E-55	4.21E-55
CHILD:	6.05E-56	8.79E-56
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - MATAGORDA BAY / GULF

	T. BODY	SKIN
ADULT:	1.56E-56	2.26E-56
TEEN:	8.69E-56	1.26E-55
CHILD:	1.82E-56	2.64E-56
INFANT:	0.00E+00	0.00E+00

Table B4-7 Continued

INDIVIDUAL DOSE FACTORS FOR LIQUID EFFLUENTS -- FOR ISOTOPE : BR84

FOR PATHWAY: FRESHWATER FISH - LITTLE ROBBINS SLOUGH

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - LITTLE ROBBINS SLOUGH

	T. BODY	SKIN
ADULT:	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - COLORADO RIVER

	T. BODY	SKIN
ADULT:	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - MATAGORDA BAY / GULF

	T. BODY	SKIN
ADULT:	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00

Table B4-7 Continued

INDIVIDUAL DOSE FACTORS FOR LIQUID EFFLUENTS -- FOR ISOTOPE : BR85

FOR PATHWAY: FRESHWATER FISH - LITTLE ROBBINS SLOUGH

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - LITTLE ROBBINS SLOUGH

	T. BODY	SKIN
ADULT:	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - COLORADO RIVER

	T. BODY	SKIN
ADULT:	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - MATAGORDA BAY / GULF

	T. BODY	SKIN
ADULT:	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00

Table B4-7 Continued

INDIVIDUAL DOSE FACTORS FOR LIQUID EFFLUENTS -- FOR ISOTOPE : BR86

FOR PATHWAY: FRESHWATER FISH - LITTLE ROBBINS SLOUGH

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	1.86E-02	7.86E-03	0.00E+00	3.99E-02	0.00E+00	0.00E+00	0.00E+00
TEEN:	2.02E-02	6.35E-03	0.00E+00	4.29E-02	0.00E+00	0.00E+00	0.00E+00
CHILD:	2.56E-02	2.68E-03	0.00E+00	4.16E-02	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	1.26E-05	5.31E-06	0.00E+00	2.69E-05	0.00E+00	0.00E+00	0.00E+00
TEEN:	1.36E-05	4.29E-06	0.00E+00	2.90E-05	0.00E+00	0.00E+00	0.00E+00
CHILD:	1.73E-05	1.81E-06	0.00E+00	2.81E-05	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	1.51E-06	6.39E-07	0.00E+00	3.24E-06	0.00E+00	0.00E+00	0.00E+00
TEEN:	1.64E-06	5.16E-07	0.00E+00	3.49E-06	0.00E+00	0.00E+00	0.00E+00
CHILD:	2.08E-06	2.17E-07	0.00E+00	3.38E-06	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	6.12E-06	2.59E-06	0.00E+00	1.31E-05	0.00E+00	0.00E+00	0.00E+00
TEEN:	6.10E-06	1.92E-06	0.00E+00	1.30E-05	0.00E+00	0.00E+00	0.00E+00
CHILD:	8.72E-06	9.13E-07	0.00E+00	1.42E-05	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	7.36E-07	3.12E-07	0.00E+00	1.58E-06	0.00E+00	0.00E+00	0.00E+00
TEEN:	7.34E-07	2.31E-07	0.00E+00	1.56E-06	0.00E+00	0.00E+00	0.00E+00
CHILD:	1.05E-06	1.10E-07	0.00E+00	1.71E-06	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - LITTLE ROBBINS SLOUGH

	T. BODY	SKIN
ADULT:	1.31E-07	1.50E-07
TEEN:	7.33E-07	8.38E-07
CHILD:	1.53E-07	1.75E-07
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - COLORADO RIVER

	T. BODY	SKIN
ADULT:	2.14E-08	2.44E-08
TEEN:	1.19E-07	1.36E-07
CHILD:	2.50E-08	2.85E-08
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - MATAGORDA BAY / GULF

	T. BODY	SKIN
ADULT:	6.43E-09	7.35E-09
TEEN:	3.59E-08	4.10E-08
CHILD:	7.50E-09	8.57E-09
INFANT:	0.00E+00	0.00E+00

Table B4-7 Continued

INDIVIDUAL DOSE FACTORS FOR LIQUID EFFLUENTS -- FOR ISOTOPE : RB88

FOR PATHWAY: FRESHWATER FISH - LITTLE ROBBINS SLOUGH

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - LITTLE ROBBINS SLOUGH

	T. BODY	SKIN
ADULT:	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - COLORADO RIVER

	T. BODY	SKIN
ADULT:	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - MATAGORDA BAY / GULF

	T. BODY	SKIN
ADULT:	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00

Table B4-7 Continued

INDIVIDUAL DOSE FACTORS FOR LIQUID EFFLUENTS -- FOR ISOTOPE : RB89

FOR PATHWAY: FRESHWATER FISH - LITTLE ROBBINS SLOUGH

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - LITTLE ROBBINS SLOUGH

	T. BODY	SKIN
ADULT:	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - COLORADO RIVER

	T. BODY	SKIN
ADULT:	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - MATAGORDA BAY / GULF

	T. BODY	SKIN
ADULT:	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00

Table B4-7 Continued

INDIVIDUAL DOSE FACTORS FOR LIQUID EFFLUENTS -- FOR ISOTOPE : SR89

FOR PATHWAY: FRESHWATER FISH - LITTLE ROBBINS SLOUGH

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	9.54E-04	5.33E-03	3.32E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	1.04E-03	4.31E-03	3.62E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	1.34E-03	1.81E-03	4.68E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	1.03E-05	5.78E-05	3.60E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	1.12E-05	4.67E-05	3.92E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	1.45E-05	1.96E-05	5.07E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	1.24E-06	6.94E-06	4.33E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	1.35E-06	5.61E-06	4.71E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	1.74E-06	2.36E-06	6.09E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	2.46E-05	1.38E-04	8.57E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	2.46E-05	1.02E-04	8.57E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	3.57E-05	4.84E-05	1.25E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	2.96E-06	1.65E-05	1.03E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	2.95E-06	1.23E-05	1.03E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	4.29E-06	5.81E-06	1.50E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - LITTLE ROBBINS SLOUGH

	T. BODY	SKIN
ADULT:	1.18E-09	1.37E-09
TEEN:	6.58E-09	7.64E-09
CHILD:	1.38E-09	1.60E-09
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - COLORADO RIVER

	T. BODY	SKIN
ADULT:	1.92E-10	2.22E-10
TEEN:	1.07E-09	1.24E-09
CHILD:	2.23E-10	2.59E-10
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - MATAGORDA BAY / GULF

	T. BODY	SKIN
ADULT:	5.75E-11	6.68E-11
TEEN:	3.21E-10	3.73E-10
CHILD:	6.71E-11	7.79E-11
INFANT:	0.00E+00	0.00E+00

Table B4-7 Continued

INDIVIDUAL DOSE FACTORS FOR LIQUID EFFLUENTS -- FOR ISOTOPE : SR90

FOR PATHWAY: FRESHWATER FISH - LITTLE ROBBINS SLOUGH

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	8.31E+00	9.79E-01	3.39E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	6.98E+00	7.93E-01	2.83E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	6.33E+00	3.36E-01	2.50E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	9.06E-02	1.07E-02	3.69E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	7.61E-02	8.65E-03	3.08E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	6.90E-02	3.67E-03	2.72E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	1.09E-02	1.28E-03	4.44E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	9.15E-03	1.04E-03	3.70E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	8.29E-03	4.41E-04	3.27E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	2.16E-01	2.54E-02	8.79E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	1.66E-01	1.89E-02	6.74E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	1.70E-01	9.03E-03	6.70E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	2.59E-02	3.05E-03	1.06E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	2.00E-02	2.27E-03	8.10E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	2.04E-02	1.09E-03	8.06E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - LITTLE ROBBINS SLOUGH

	T. BODY	SKIN
ADULT:	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - COLORADO RIVER

	T. BODY	SKIN
ADULT:	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - MATAGORDA BAY / GULF

	T. BODY	SKIN
ADULT:	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00

Table B4-7 Continued

INDIVIDUAL DOSE FACTORS FOR LIQUID EFFLUENTS -- FOR ISOTOPE : SR91

FOR PATHWAY: FRESHWATER FISH - LITTLE ROBBINS SLOUGH

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	1.55E-18	1.83E-16	3.84E-17	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	1.66E-18	1.89E-16	4.16E-17	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	2.01E-18	1.18E-16	5.34E-17	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	1.68E-20	1.98E-18	4.17E-19	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	1.80E-20	2.05E-18	4.52E-19	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	2.19E-20	1.28E-18	5.79E-19	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	2.02E-21	2.39E-19	5.01E-20	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	2.16E-21	2.46E-19	5.43E-20	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	2.63E-21	1.54E-19	6.97E-20	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	4.01E-20	4.72E-18	9.92E-19	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	3.93E-20	4.48E-18	9.88E-19	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	5.39E-20	3.15E-18	1.43E-18	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	4.82E-21	5.68E-19	1.19E-19	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	4.73E-21	5.39E-19	1.19E-19	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	6.48E-21	3.79E-19	1.72E-19	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - LITTLE ROBBINS SLOUGH

	T. BODY	SKIN
ADULT:	4.12E-20	4.81E-20
TEEN:	2.30E-19	2.69E-19
CHILD:	4.81E-20	5.62E-20
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - COLORADO RIVER

	T. BODY	SKIN
ADULT:	6.71E-21	7.84E-21
TEEN:	3.74E-20	4.38E-20
CHILD:	7.82E-21	9.15E-21
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - MATAGORDA BAY / GULF

	T. BODY	SKIN
ADULT:	2.02E-21	2.36E-21
TEEN:	1.13E-20	1.32E-20
CHILD:	2.35E-21	2.75E-21
INFANT:	0.00E+00	0.00E+00

Table B4-7 Continued

INDIVIDUAL DOSE FACTORS FOR LIQUID EFFLUENTS -- FOR ISOTOPE : SR92

FOR PATHWAY: FRESHWATER FISH - LITTLE ROBBINS SLOUGH

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	2.95E-48	1.35E-45	6.83E-47	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	3.14E-48	1.88E-45	7.38E-47	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	3.78E-48	1.78E-45	9.42E-47	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	3.20E-50	1.47E-47	7.40E-49	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	3.41E-50	2.04E-47	8.00E-49	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	4.09E-50	1.93E-47	1.02E-48	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	3.85E-51	1.76E-48	8.90E-50	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	4.10E-51	2.45E-48	9.62E-50	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	4.93E-51	2.33E-48	1.23E-49	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	7.62E-50	3.49E-47	1.76E-48	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	7.46E-50	4.46E-47	1.75E-48	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	1.01E-49	4.77E-47	2.52E-48	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	9.17E-51	4.20E-48	2.12E-49	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	8.97E-51	5.36E-48	2.11E-49	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	1.21E-50	5.73E-48	3.03E-49	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - LITTLE ROBBINS SLOUGH

	T. BODY	SKIN
ADULT:	5.69E-48	6.32E-48
TEEN:	3.18E-47	3.53E-47
CHILD:	6.64E-48	7.37E-48
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - COLORADO RIVER

	T. BODY	SKIN
ADULT:	9.25E-49	1.03E-48
TEEN:	5.17E-48	5.74E-48
CHILD:	1.08E-48	1.20E-48
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - MATAGORDA BAY / GULF

	T. BODY	SKIN
ADULT:	2.78E-49	3.09E-49
TEEN:	1.55E-48	1.73E-48
CHILD:	3.25E-49	3.61E-49
INFANT:	0.00E+00	0.00E+00

Table B4-7 Continued

INDIVIDUAL DOSE FACTORS FOR LIQUID EFFLUENTS -- FOR ISOTOPE : Y90

FOR PATHWAY: FRESHWATER FISH - LITTLE ROBBINS SLOUGH

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	3.15E-11	1.24E-05	1.17E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	3.43E-11	1.05E-05	1.27E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	4.41E-11	4.69E-06	1.65E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	5.13E-12	2.03E-06	1.91E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	5.59E-12	1.71E-06	2.08E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	7.19E-12	7.65E-07	2.69E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	6.17E-13	2.44E-07	2.30E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	6.72E-13	2.06E-07	2.49E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	8.64E-13	9.19E-08	3.23E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	4.89E-11	1.93E-05	1.82E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	4.89E-11	1.50E-05	1.82E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	7.09E-11	7.54E-06	2.65E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	5.87E-12	2.32E-06	2.19E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	5.88E-12	1.80E-06	2.18E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	8.51E-12	9.05E-07	3.18E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - LITTLE ROBBINS SLOUGH

	T. BODY	SKIN
ADULT:	4.25E-13	5.02E-13
TEEN:	2.37E-12	2.80E-12
CHILD:	4.95E-13	5.86E-13
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - COLORADO RIVER

	T. BODY	SKIN
ADULT:	6.93E-14	8.19E-14
TEEN:	3.87E-13	4.57E-13
CHILD:	8.08E-14	9.55E-14
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - MATAGORDA BAY / GULF

	T. BODY	SKIN
ADULT:	2.08E-14	2.46E-14
TEEN:	1.16E-13	1.37E-13
CHILD:	2.43E-14	2.87E-14
INFANT:	0.00E+00	0.00E+00

Table B4-7 Continued

INDIVIDUAL DOSE FACTORS FOR LIQUID EFFLUENTS -- FOR ISOTOPE : Y91M

FOR PATHWAY: FRESHWATER FISH - LITTLE ROBBINS SLOUGH

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.(E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - LITTLE ROBBINS SLOUGH

	T. BODY	SKIN
ADULT:	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - COLORADO RIVER

	T. BODY	SKIN
ADULT:	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - MATAGORDA BAY / GULF

	T. BODY	SKIN
ADULT:	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00

Table B4-7 Continued

INDIVIDUAL DOSE FACTORS FOR LIQUID EFFLUENTS -- FOR ISOTOPE : Y91

FOR PATHWAY: FRESHWATER FISH - LITTLE ROBBINS SLOUGH

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	4.02E-07	8.28E-03	1.50E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	4.38E-07	6.70E-03	1.63E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	5.64E-07	2.81E-03	2.11E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	6.56E-08	1.35E-03	2.45E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	7.15E-08	1.09E-03	2.66E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	9.20E-08	4.58E-04	3.44E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	7.89E-09	1.62E-04	2.95E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	8.59E-09	1.31E-04	3.20E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	1.11E-08	5.51E-05	4.14E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	6.21E-07	1.28E-02	2.32E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	6.22E-07	9.51E-03	2.32E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	9.02E-07	4.49E-03	3.37E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	7.51E-08	1.55E-03	2.81E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	7.52E-08	1.15E-03	2.80E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	1.09E-07	5.43E-04	4.08E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - LITTLE ROBBINS SLOUGH

	T. BODY	SKIN
ADULT:	6.93E-08	7.79E-08
TEEN:	3.87E-07	4.35E-07
CHILD:	8.08E-08	9.09E-08
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - COLORADO RIVER

	T. BODY	SKIN
ADULT:	1.13E-08	1.27E-08
TEEN:	6.31E-08	7.10E-08
CHILD:	1.32E-08	1.48E-08
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - MATAGORDA BAY / GULF

	T. BODY	SKIN
ADULT:	3.40E-09	3.82E-09
TEEN:	1.90E-08	2.13E-08
CHILD:	3.96E-09	4.46E-09
INFANT:	0.00E+00	0.00E+00

Table B4-7 Continued

INDIVIDUAL DOSE FACTORS FOR LIQUID EFFLUENTS -- FOR ISOTOPE : Y92

FOR PATHWAY: FRESHWATER FISH - LITTLE ROBBINS SLOUGH

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	1.65E-42	9.87E-37	5.63E-41	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	1.78E-42	1.69E-36	6.15E-41	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	2.26E-42	2.28E-36	7.89E-41	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	2.69E-43	1.61E-37	9.21E-42	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	2.91E-43	2.76E-37	1.00E-41	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	3.69E-43	3.72E-37	1.29E-41	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - MATAGORDA BAY , GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	3.23E-44	1.93E-38	1.10E-42	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	3.48E-44	3.30E-38	1.20E-42	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	4.42E-44	4.46E-38	1.54E-42	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	2.56E-42	1.54E-36	8.77E-41	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	2.54E-42	2.41E-36	8.79E-41	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	3.63E-42	3.67E-36	1.27E-40	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	3.07E-43	1.84E-37	1.05E-41	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	3.05E-43	2.89E-37	1.05E-41	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	4.36E-43	4.40E-37	1.52E-41	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - LITTLE ROBBINS SLOUGH

	T. BODY	SKIN
ADULT:	7.98E-40	9.47E-40
TEEN:	4.45E-39	5.29E-39
CHILD:	9.31E-40	1.11E-39
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - COLORADO RIVER

	T. BODY	SKIN
ADULT:	1.30E-40	1.55E-40
TEEN:	7.28E-40	8.65E-40
CHILD:	1.52E-40	1.81E-40
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - MATAGORDA BAY / GULF

	T. BODY	SKIN
ADULT:	3.91E-41	4.64E-41
TEEN:	2.18E-40	2.59E-40
CHILD:	4.56E-41	5.41E-41
INFANT:	0.00E+00	0.00E+00

Table B4-7 Continued

INDIVIDUAL DOSE FACTORS FOR LIQUID EFFLUENTS -- FOR ISOTOPE : Y93

FOR PATHWAY: FRESHWATER FISH - LITTLE ROBBINS SLOUGH

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	2.15E-21	2.47E-15	7.79E-20	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	2.33E-21	2.59E-15	8.48E-20	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	2.99E-21	1.62E-15	1.09E-19	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	3.51E-22	4.03E-16	1.27E-20	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	3.80E-22	4.23E-16	1.39E-20	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	4.88E-22	2.65E-16	1.78E-20	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	4.22E-23	4.85E-17	1.53E-21	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	4.56E-23	5.08E-17	1.66E-21	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	5.87E-23	3.19E-17	2.14E-21	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	3.35E-21	3.84E-15	1.21E-19	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	3.32E-21	3.70E-15	1.21E-19	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	4.81E-21	2.61E-15	1.75E-19	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	4.02E-22	4.62E-16	1.46E-20	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	3.99E-22	4.45E-16	1.46E-20	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	5.78E-22	3.14E-16	2.11E-20	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - LITTLE ROBBINS SLOUGH

	T. BODY	SKIN
ADULT:	1.63E-20	2.24E-20
TEEN:	9.12E-20	1.25E-19
CHILD:	1.91E-20	2.61E-20
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - COLORADO RIVER

	T. BODY	SKIN
ADULT:	2.67E-21	3.65E-21
TEEN:	1.49E-20	2.04E-20
CHILD:	3.11E-21	4.26E-21
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - MATAGORDA BAY / GULF

	T. BODY	SKIN
ADULT:	8.02E-22	1.10E-21
TEEN:	4.48E-21	6.12E-21
CHILD:	9.35E-22	1.28E-21
INFANT:	0.00E+00	0.00E+00

Table B4-7 Continued

INDIVIDUAL DOSE FACTORS FOR LIQUID EFFLUENTS -- FOR ISOTOPE : ZR95

FOR PATHWAY: FRESHWATER FISH - LITTLE ROBBINS SLOUGH

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	1.04E-07	4.85E-04	4.77E-07	1.53E-07	2.40E-07	0.00E+00	0.00E+00
TEEN:	1.07E-07	3.59E-04	4.93E-07	1.56E-07	2.28E-07	0.00E+00	0.00E+00
CHILD:	1.17E-07	1.37E-04	5.98E-07	1.32E-07	1.88E-07	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	1.03E-06	4.80E-03	4.72E-06	1.51E-06	2.38E-06	0.00E+00	0.00E+00
TEEN:	1.06E-06	3.55E-03	4.88E-06	1.54E-06	2.26E-06	0.00E+00	0.00E+00
CHILD:	1.16E-06	1.36E-03	5.92E-06	1.30E-06	1.86E-06	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	1.23E-07	5.76E-04	5.67E-07	1.82E-07	2.85E-07	0.00E+00	0.00E+00
TEEN:	1.27E-07	4.26E-04	5.86E-07	1.85E-07	2.71E-07	0.00E+00	0.00E+00
CHILD:	1.39E-07	1.63E-04	7.11E-07	1.56E-07	2.24E-07	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	9.76E-08	4.57E-04	4.50E-07	1.44E-07	2.26E-07	0.00E+00	0.00E+00
TEEN:	9.26E-08	3.11E-04	4.27E-07	1.35E-07	1.99E-07	0.00E+00	0.00E+00
CHILD:	1.14E-07	1.34E-04	5.83E-07	1.28E-07	1.84E-07	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	1.17E-08	5.49E-05	5.40E-08	1.73E-08	2.72E-08	0.00E+00	0.00E+00
TEEN:	1.11E-08	3.73E-05	5.12E-08	1.62E-08	2.38E-08	0.00E+00	0.00E+00
CHILD:	1.37E-08	1.61E-05	7.01E-08	1.54E-08	2.20E-08	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - LITTLE ROBBINS SLOUGH

	T. BODY	SKIN
ADULT:	1.77E-05	2.05E-05
TEEN:	9.88E-05	1.15E-04
CHILD:	2.06E-05	2.40E-05
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - COLORADO RIVER

	T. BODY	SKIN
ADULT:	2.89E-06	3.35E-06
TEEN:	1.61E-05	1.87E-05
CHILD:	3.37E-06	3.91E-06
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - MATAGORDA BAY / GULF

	T. BODY	SKIN
ADULT:	8.67E-07	1.01E-06
TEEN:	4.84E-06	5.62E-06
CHILD:	1.01E-06	1.17E-06
INFANT:	0.00E+00	0.00E+00

Table B4-7 Continued

INDIVIDUAL DOSE FACTORS FOR LIQUID EFFLUENTS -- FOR ISOTOPE : ZR97

FOR PATHWAY: FRESHWATER FISH - LITTLE ROBBINS SLOUGH

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	1.14E-17	7.72E-12	1.24E-16	2.49E-17	3.76E-17	0.00E+00	0.00E+00
TEEN:	1.21E-17	7.11E-12	1.33E-16	2.63E-17	3.98E-17	0.00E+00	0.00E+00
CHILD:	1.44E-17	3.70E-12	1.69E-16	2.44E-17	3.50E-17	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	1.13E-16	7.63E-11	1.22E-15	2.46E-16	3.72E-16	0.00E+00	0.00E+00
TEEN:	1.20E-16	7.03E-11	1.31E-15	2.60E-16	3.94E-16	0.00E+00	0.00E+00
CHILD:	1.42E-16	3.65E-11	1.67E-15	2.41E-16	3.46E-16	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	1.35E-17	9.16E-12	1.47E-16	2.96E-17	4.47E-17	0.00E+00	0.00E+00
TEEN:	1.44E-17	8.44E-12	1.58E-16	3.12E-17	4.73E-17	0.00E+00	0.00E+00
CHILD:	1.71E-17	4.39E-12	2.00E-16	2.89E-17	4.16E-17	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	1.07E-17	7.26E-12	1.16E-16	2.35E-17	3.54E-17	0.00E+00	0.00E+00
TEEN:	1.05E-17	6.15E-12	1.15E-16	2.27E-17	3.44E-17	0.00E+00	0.00E+00
CHILD:	1.40E-17	3.60E-12	1.64E-16	2.38E-17	3.41E-17	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	1.29E-18	8.72E-13	1.40E-17	2.82E-18	4.25E-18	0.00E+00	0.00E+00
TEEN:	1.26E-18	7.39E-13	1.38E-17	2.73E-18	4.13E-18	0.00E+00	0.00E+00
CHILD:	1.68E-18	4.32E-13	1.97E-17	2.85E-18	4.10E-18	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - LITTLE ROBBINS SLOUGH

	T. BODY	SKIN
ADULT:	2.64E-15	3.07E-15
TEEN:	1.47E-14	1.71E-14
CHILD:	3.08E-15	3.58E-15
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - COLORADO RIVER

	T. BODY	SKIN
ADULT:	4.30E-16	5.00E-16
TEEN:	2.40E-15	2.79E-15
CHILD:	5.02E-16	5.84E-16
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - MATAGORDA BAY / GULF

	T. BODY	SKIN
ADULT:	1.29E-16	1.50E-16
TEEN:	7.21E-16	8.39E-16
CHILD:	1.51E-16	1.75E-16
INFANT:	0.00E+00	0.00E+00

Table B4-7 Continued

INDIVIDUAL DOSE FACTORS FOR LIQUID EFFLUENTS -- FOR ISOTOPE : NB95

FOR PATHWAY: FRESHWATER FISH - LITTLE ROBBINS SLOUGH

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	1.28E-04	1.45E+00	4.30E-04	2.39E-04	2.36E-04	0.00E+00	0.00E+00
TEEN:	1.32E-04	1.03E+00	4.33E-04	2.40E-04	2.33E-04	0.00E+00	0.00E+00
CHILD:	1.42E-04	3.68E-01	5.11E-04	1.99E-04	1.87E-04	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	2.09E-05	2.37E-01	7.01E-05	3.90E-05	3.85E-05	0.00E+00	0.00E+00
TEEN:	2.15E-05	1.67E-01	7.05E-05	3.91E-05	3.79E-05	0.00E+00	0.00E+00
CHILD:	2.32E-05	6.00E-02	8.33E-05	3.24E-05	3.05E-05	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	2.53E-06	2.85E-02	8.45E-06	4.70E-06	4.65E-06	0.00E+00	0.00E+00
TEEN:	2.60E-06	2.02E-02	8.51E-06	4.72E-06	4.57E-06	0.00E+00	0.00E+00
CHILD:	2.79E-06	7.23E-03	1.00E-05	3.91E-06	3.67E-06	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	1.66E-08	1.88E-04	5.56E-08	3.09E-08	3.06E-08	0.00E+00	0.00E+00
TEEN:	1.57E-08	1.22E-04	5.14E-08	2.85E-08	2.77E-08	0.00E+00	0.00E+00
CHILD:	1.90E-08	4.92E-05	6.84E-08	2.66E-08	2.50E-08	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	2.01E-09	2.26E-05	6.71E-09	3.73E-09	3.69E-09	0.00E+00	0.00E+00
TEEN:	1.89E-09	1.47E-05	6.20E-09	3.44E-09	3.34E-09	0.00E+00	0.00E+00
CHILD:	2.29E-09	5.94E-06	8.25E-09	3.21E-09	3.02E-09	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - LITTLE ROBBINS SLOUGH

	T. BODY	SKIN
ADULT:	4.81E-06	5.66E-06
TEEN:	2.69E-05	3.16E-05
CHILD:	5.61E-06	6.60E-06
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - COLORADO RIVER

	T. BODY	SKIN
ADULT:	7.85E-07	9.23E-07
TEEN:	4.38E-06	5.15E-06
CHILD:	9.15E-07	1.08E-06
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - MATAGORDA BAY / GULF

	T. BODY	SKIN
ADULT:	2.37E-07	2.78E-07
TEEN:	1.32E-06	1.55E-06
CHILD:	2.76E-07	3.25E-07
INFANT:	0.00E+00	0.00E+00

Table B4-7 Continued

INDIVIDUAL DOSE FACTORS FOR LIQUID EFFLUENTS -- FOR ISOTOPE : MO99

FOR PATHWAY: FRESHWATER FISH - LITTLE ROBBINS SLOUGH

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	4.67E-08	5.69E-07	0.00E+00	2.45E-07	5.56E-07	0.00E+00	0.00E+00
TEEN:	4.99E-08	4.69E-07	0.00E+00	2.62E-07	5.99E-07	0.00E+00	0.00E+00
CHILD:	6.16E-08	2.06E-07	0.00E+00	2.49E-07	5.31E-07	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	7.61E-09	9.27E-08	0.00E+00	4.00E-08	9.06E-08	0.00E+00	0.00E+00
TEEN:	8.13E-09	7.64E-08	0.00E+00	4.26E-08	9.76E-08	0.00E+00	0.00E+00
CHILD:	1.00E-08	3.35E-08	0.00E+00	4.06E-08	8.66E-08	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	9.16E-10	1.12E-08	0.00E+00	4.81E-09	1.09E-08	0.00E+00	0.00E+00
TEEN:	9.78E-10	9.19E-09	0.00E+00	5.13E-09	1.17E-08	0.00E+00	0.00E+00
CHILD:	1.21E-09	4.04E-09	0.00E+00	4.88E-09	1.04E-08	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	1.81E-09	2.21E-08	0.00E+00	9.52E-09	2.16E-08	0.00E+00	0.00E+00
TEEN:	1.78E-09	1.67E-08	0.00E+00	9.33E-09	2.13E-08	0.00E+00	0.00E+00
CHILD:	2.47E-09	8.26E-09	0.00E+00	9.99E-09	2.13E-08	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	2.18E-10	2.66E-09	0.00E+00	1.15E-09	2.59E-09	0.00E+00	0.00E+00
TEEN:	2.14E-10	2.01E-09	0.00E+00	1.12E-09	2.57E-09	0.00E+00	0.00E+00
CHILD:	2.97E-10	9.94E-10	0.00E+00	1.20E-09	2.57E-09	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - LITTLE ROBBINS SLOUGH

	T. BODY	SKIN
ADULT:	4.38E-10	5.08E-10
TEEN:	2.45E-09	2.83E-09
CHILD:	5.12E-10	5.92E-10
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - COLORADO RIVER

	T. BODY	SKIN
ADULT:	7.14E-11	8.27E-11
TEEN:	3.99E-10	4.62E-10
CHILD:	8.34E-11	9.65E-11
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - MATAGORDA BAY / GULF

	T. BODY	SKIN
ADULT:	2.15E-11	2.49E-11
TEEN:	1.20E-10	1.39E-10
CHILD:	2.51E-11	2.90E-11
INFANT:	0.00E+00	0.00E+00

Table B4-7 Continued

INDIVIDUAL DOSE FACTORS FOR LIQUID EFFLUENTS -- FOR ISOTOPE : TC99M

FOR PATHWAY: FRESHWATER FISH - LITTLE ROBBINS SLOUGH

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	3.02E-27	1.40E-25	8.38E-29	2.37E-28	3.60E-27	0.00E+00	1.16E-28
TEEN:	3.10E-27	1.57E-25	8.59E-29	2.39E-28	3.57E-27	0.00E+00	1.33E-28
CHILD:	3.35E-27	1.15E-25	1.03E-28	2.02E-28	2.93E-27	0.00E+00	1.02E-28
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	3.28E-28	1.52E-26	9.12E-30	2.58E-29	3.91E-28	0.00E+00	1.26E-29
TEEN:	3.38E-28	1.71E-26	9.34E-30	2.60E-29	3.88E-28	0.00E+00	1.45E-29
CHILD:	3.64E-28	1.25E-26	1.12E-29	2.20E-29	3.19E-28	0.00E+00	1.11E-29
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	3.95E-29	1.84E-27	1.10E-30	3.10E-30	4.71E-29	0.00E+00	1.52E-30
TEEN:	4.06E-29	2.06E-27	1.12E-30	3.14E-30	4.67E-29	0.00E+00	1.74E-30
CHILD:	4.38E-29	1.50E-27	1.35E-30	2.64E-30	3.84E-29	0.00E+00	1.34E-30
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	3.91E-28	1.82E-26	1.09E-29	3.07E-29	4.66E-28	0.00E+00	1.50E-29
TEEN:	3.69E-28	1.87E-26	1.02E-29	2.85E-29	4.25E-28	0.00E+00	1.58E-29
CHILD:	4.48E-28	1.54E-26	1.38E-29	2.70E-29	3.93E-28	0.00E+00	1.37E-29
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	4.70E-29	2.19E-27	1.31E-30	3.69E-30	5.61E-29	0.00E+00	1.81E-30
TEEN:	4.45E-29	2.25E-27	1.23E-30	3.43E-30	5.11E-29	0.00E+00	1.90E-30
CHILD:	5.40E-29	1.85E-27	1.66E-30	3.26E-30	4.73E-29	0.00E+00	1.65E-30
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - LITTLE ROBBINS SLOUGH

	T. BODY	SKIN
ADULT:	9.87E-28	1.13E-27
TEEN:	5.51E-27	6.31E-27
CHILD:	1.15E-27	1.32E-27
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - COLORADO RIVER

	T. BODY	SKIN
ADULT:	1.61E-28	1.84E-28
TEEN:	8.99E-28	1.03E-27
CHILD:	1.88E-28	2.15E-28
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - MATAGORDA BAY / GULF

	T. BODY	SKIN
ADULT:	4.85E-29	5.55E-29
TEEN:	2.71E-28	3.10E-28
CHILD:	5.65E-29	6.48E-29
INFANT:	0.00E+00	0.00E+00

Table B4-7 Continued

INDIVIDUAL DOSE FACTORS FOR LIQUID EFFLUENTS -- FOR ISOTOPE : TC101

FOR PATHWAY: FRESHWATER FISH - LITTLE ROBBINS SLOUGH

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - LITTLE ROBBINS SLOUGH

	T. BODY	SKIN
ADULT:	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - COLORADO RIVER

	T. BODY	SKIN
ADULT:	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - MATAGORDA BAY / GULF

	T. BODY	SKIN
ADULT:	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00

Table B4-7 Continued

INDIVIDUAL DOSE FACTORS FOR LIQUID EFFLUENTS -- FOR ISOTOPE : RU103

FOR PATHWAY: FRESHWATER FISH - LITTLE ROBBINS SLOUGH

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	2.12E-06	5.73E-04	4.91E-06	0.00E+00	1.87E-05	0.00E+00	0.00E+00
TEEN:	2.20E-06	4.31E-04	5.16E-06	0.00E+00	1.82E-05	0.00E+00	0.00E+00
CHILD:	2.45E-06	1.65E-04	6.37E-06	0.00E+00	1.60E-05	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	1.04E-07	2.82E-05	2.41E-07	0.00E+00	9.21E-07	0.00E+00	0.00E+00
TEEN:	1.08E-07	2.12E-05	2.53E-07	0.00E+00	8.94E-07	0.00E+00	0.00E+00
CHILD:	1.20E-07	8.10E-06	3.13E-07	0.00E+00	7.89E-07	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	1.25E-08	3.38E-06	2.90E-08	0.00E+00	1.11E-07	0.00E+00	0.00E+00
TEEN:	1.30E-08	2.54E-06	3.04E-08	0.00E+00	1.07E-07	0.00E+00	0.00E+00
CHILD:	1.45E-08	9.72E-07	3.76E-08	0.00E+00	9.46E-08	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	8.25E-06	2.24E-03	1.92E-05	0.00E+00	7.31E-05	0.00E+00	0.00E+00
TEEN:	7.90E-06	1.54E-03	1.85E-05	0.00E+00	6.52E-05	0.00E+00	0.00E+00
CHILD:	9.89E-06	6.65E-04	2.57E-05	0.00E+00	6.48E-05	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	9.90E-07	2.68E-04	2.30E-06	0.00E+00	8.77E-06	0.00E+00	0.00E+00
TEEN:	9.48E-07	1.85E-04	2.22E-06	0.00E+00	7.82E-06	0.00E+00	0.00E+00
CHILD:	1.19E-06	7.98E-05	3.09E-06	0.00E+00	7.77E-06	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - LITTLE ROBBINS SLOUGH

	T. BODY	SKIN
ADULT:	4.37E-06	5.10E-06
TEEN:	2.44E-05	2.85E-05
CHILD:	5.10E-06	5.95E-06
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - COLORADO RIVER

	T. BODY	SKIN
ADULT:	7.17E-07	8.36E-07
TEEN:	4.00E-06	4.67E-06
CHILD:	8.36E-07	9.75E-07
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - MATAGORDA BAY / GULF

	T. BODY	SKIN
ADULT:	2.15E-07	2.51E-07
TEEN:	1.20E-06	1.40E-06
CHILD:	2.51E-07	2.93E-07
INFANT:	0.00E+00	0.00E+00

Table B4-7 Continued

INDIVIDUAL DOSE FACTORS FOR LIQUID EFFLUENTS -- FOR ISOTOPE : RU105

FOR PATHWAY: FRESHWATER FISH -- LITTLE ROBBINS SLOUGH

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	3.99E-34	6.18E-31	1.01E-33	0.00E+00	1.30E-32	0.00E+00	0.00E+00
TEEN:	4.23E-34	8.79E-31	1.09E-33	0.00E+00	1.37E-32	0.00E+00	0.00E+00
CHILD:	5.04E-34	9.07E-31	1.39E-33	0.00E+00	1.22E-32	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH -- COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	1.96E-35	3.03E-32	4.95E-35	0.00E+00	6.40E-34	0.00E+00	0.00E+00
TEEN:	2.07E-35	4.31E-32	5.34E-35	0.00E+00	6.74E-34	0.00E+00	0.00E+00
CHILD:	2.47E-35	4.45E-32	6.82E-35	0.00E+00	5.99E-34	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	2.35E-36	3.65E-33	5.96E-36	0.00E+00	7.70E-35	0.00E+00	0.00E+00
TEEN:	2.50E-36	5.19E-33	6.43E-36	0.00E+00	8.11E-35	0.00E+00	0.00E+00
CHILD:	2.98E-36	5.36E-33	8.20E-36	0.00E+00	7.21E-35	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	1.55E-33	2.41E-30	3.93E-33	0.00E+00	5.08E-32	0.00E+00	0.00E+00
TEEN:	1.51E-33	3.15E-30	3.90E-33	0.00E+00	4.91E-32	0.00E+00	0.00E+00
CHILD:	2.03E-33	3.65E-30	5.60E-33	0.00E+00	4.92E-32	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	1.87E-34	2.89E-31	4.73E-34	0.00E+00	6.11E-33	0.00E+00	0.00E+00
TEEN:	1.82E-34	3.79E-31	4.69E-34	0.00E+00	5.91E-33	0.00E+00	0.00E+00
CHILD:	2.44E-34	4.40E-31	6.74E-34	0.00E+00	5.92E-33	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - LITTLE ROBBINS SLOUGH

	T. BODY	SKIN
ADULT:	2.64E-33	2.99E-33
TEEN:	1.48E-32	1.67E-32
CHILD:	3.08E-33	3.49E-33
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - COLORADO RIVER

	T. BODY	SKIN
ADULT:	4.32E-34	4.90E-34
TEEN:	2.41E-33	2.73E-33
CHILD:	5.04E-34	5.71E-34
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - MATAGORDA BAY / GULF

	T. BODY	SKIN
ADULT:	1.30E-34	1.47E-34
TEEN:	7.26E-34	8.23E-34
CHILD:	1.52E-34	1.72E-34
INFANT:	0.00E+00	0.00E+00

Table B4-7 Continued

INDIVIDUAL DOSE FACTORS FOR LIQUID EFFLUENTS -- FOR ISOTOPE : RU106

FOR PATHWAY: FRESHWATER FISH - LITTLE ROBBINS SLOUGH

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	9.43E-05	4.82E-02	7.45E-04	0.00E+00	1.44E-03	0.00E+00	0.00E+00
TEEN:	1.02E-04	3.88E-02	8.09E-04	0.00E+00	1.56E-03	0.00E+00	0.00E+00
CHILD:	1.30E-04	1.62E-02	1.04E-03	0.00E+00	1.41E-03	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	4.61E-06	2.36E-03	3.64E-05	0.00E+00	7.04E-05	0.00E+00	0.00E+00
TEEN:	4.99E-06	1.90E-03	3.96E-05	0.00E+00	7.63E-05	0.00E+00	0.00E+00
CHILD:	6.36E-06	7.92E-04	5.09E-05	0.00E+00	6.88E-05	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	5.53E-07	2.83E-04	4.37E-06	0.00E+00	8.44E-06	0.00E+00	0.00E+00
TEEN:	5.99E-07	2.28E-04	4.75E-06	0.00E+00	9.16E-06	0.00E+00	0.00E+00
CHILD:	7.63E-07	9.51E-05	6.11E-06	0.00E+00	8.26E-06	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	3.66E-04	1.87E-01	2.89E-03	0.00E+00	5.58E-03	0.00E+00	0.00E+00
TEEN:	3.64E-04	1.38E-01	2.89E-03	0.00E+00	5.57E-03	0.00E+00	0.00E+00
CHILD:	5.22E-04	6.51E-02	4.18E-03	0.00E+00	5.65E-03	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	4.39E-05	2.25E-02	3.47E-04	0.00E+00	6.70E-04	0.00E+00	0.00E+00
TEEN:	4.36E-05	1.66E-02	3.46E-04	0.00E+00	6.68E-04	0.00E+00	0.00E+00
CHILD:	6.27E-05	7.81E-03	5.02E-04	0.00E+00	6.78E-04	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - LITTLE ROBBINS SLOUGH

	T. BODY	SKIN
ADULT:	1.71E-04	2.06E-04
TEEN:	9.56E-04	1.15E-03
CHILD:	2.00E-04	2.40E-04
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - COLORADO RIVER

	T. BODY	SKIN
ADULT:	2.79E-05	3.35E-05
TEEN:	1.56E-04	1.87E-04
CHILD:	3.26E-05	3.91E-05
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - MATAGORDA BAY / GULF

	T. BODY	SKIN
ADULT:	8.38E-06	1.01E-05
TEEN:	4.68E-05	5.61E-05
CHILD:	9.78E-06	1.17E-05
INFANT:	0.00E+00	0.00E+00

Table B4-7 Continued

INDIVIDUAL DOSE FACTORS FOR LIQUID EFFLUENTS -- FOR ISOTOPE : AG110M

FOR PATHWAY: FRESHWATER FISH - LITTLE ROBBINS SLOUGH

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	1.68E-05	1.16E-02	3.06E-05	2.83E-05	5.57E-05	0.00E+00	0.00E+00
TEEN:	1.72E-05	7.95E-03	2.99E-05	2.83E-05	5.39E-05	0.00E+00	0.00E+00
CHILD:	1.83E-05	2.72E-03	3.39E-05	2.29E-05	4.26E-05	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	2.74E-06	1.88E-03	4.98E-06	4.61E-06	9.06E-06	0.00E+00	0.00E+00
TEEN:	2.80E-06	1.29E-03	4.86E-06	4.60E-06	8.77E-06	0.00E+00	0.00E+00
CHILD:	2.98E-06	4.43E-04	5.51E-06	3.72E-06	6.93E-06	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	3.29E-07	2.26E-04	5.98E-07	5.53E-07	1.09E-06	0.00E+00	0.00E+00
TEEN:	3.36E-07	1.55E-04	5.84E-07	5.53E-07	1.05E-06	0.00E+00	0.00E+00
CHILD:	3.57E-07	5.32E-05	6.62E-07	4.47E-07	8.33E-07	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	1.30E-04	8.95E-02	2.37E-04	2.19E-04	4.31E-04	0.00E+00	0.00E+00
TEEN:	1.22E-04	5.65E-02	2.13E-04	2.01E-04	3.84E-04	0.00E+00	0.00E+00
CHILD:	1.47E-04	2.18E-02	2.72E-04	1.83E-04	3.42E-04	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	1.56E-05	1.08E-02	2.85E-05	2.63E-05	5.18E-05	0.00E+00	0.00E+00
TEEN:	1.47E-05	6.79E-03	2.55E-05	2.42E-05	4.61E-05	0.00E+00	0.00E+00
CHILD:	1.76E-05	2.62E-03	3.26E-05	2.20E-05	4.10E-05	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - LITTLE ROBBINS SLOUGH

	T. BODY	SKIN
ADULT:	9.86E-04	1.15E-03
TEEN:	5.51E-03	6.43E-03
CHILD:	1.15E-03	1.34E-03
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - COLORADO RIVER

	T. BODY	SKIN
ADULT:	1.60E-04	1.87E-04
TEEN:	8.96E-04	1.05E-03
CHILD:	1.87E-04	2.18E-04
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - MATAGORDA BAY / GULF

	T. BODY	SKIN
ADULT:	4.82E-05	5.62E-05
TEEN:	2.69E-04	3.14E-04
CHILD:	5.62E-05	6.56E-05
INFANT:	0.00E+00	0.00E+00

Table B4-7 Continued

INDIVIDUAL DOSE FACTORS FOR LIQUID EFFLUENTS -- FOR ISOTOPE : TE125M

FOR PATHWAY: FRESHWATER FISH - LITTLE ROBBINS SLOUGH

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	6.05E-04	1.80E-02	4.52E-03	1.64E-03	1.84E-02	1.36E-03	0.00E+00
TEEN:	6.58E-04	1.45E-02	4.92E-03	1.77E-03	0.00E+00	1.37E-03	0.00E+00
CHILD:	8.42E-04	6.09E-03	6.32E-03	1.71E-03	0.00E+00	1.77E-03	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	2.47E-06	7.36E-05	1.84E-05	6.68E-06	7.50E-05	5.55E-06	0.00E+00
TEEN:	2.69E-06	5.93E-05	2.01E-05	7.24E-06	0.00E+00	5.61E-06	0.00E+00
CHILD:	3.44E-06	2.49E-05	2.58E-05	6.99E-06	0.00E+00	7.24E-06	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	2.96E-07	8.83E-06	2.21E-06	8.01E-07	8.99E-06	6.65E-07	0.00E+00
TEEN:	3.22E-07	7.10E-06	2.41E-06	8.68E-07	0.00E+00	6.73E-07	0.00E+00
CHILD:	4.12E-07	2.98E-06	3.09E-06	8.38E-07	0.00E+00	8.68E-07	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	5.88E-06	1.75E-04	4.39E-05	1.59E-05	1.79E-04	1.32E-05	0.00E+00
TEEN:	5.87E-06	1.30E-04	4.39E-05	1.58E-05	0.00E+00	1.23E-05	0.00E+00
CHILD:	8.47E-06	6.13E-05	6.35E-05	1.72E-05	0.00E+00	1.78E-05	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	7.05E-07	2.10E-05	5.27E-06	1.91E-06	2.14E-05	1.58E-06	0.00E+00
TEEN:	7.04E-07	1.55E-05	5.27E-06	1.90E-06	0.00E+00	1.47E-06	0.00E+00
CHILD:	1.02E-06	7.35E-06	7.62E-06	2.06E-06	0.00E+00	2.14E-06	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - LITTLE ROBBINS SLOUGH

	T. BODY	SKIN
ADULT:	9.90E-08	1.36E-07
TEEN:	5.53E-07	7.58E-07
CHILD:	1.15E-07	1.58E-07
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - COLORADO RIVER

	T. BODY	SKIN
ADULT:	1.62E-08	2.22E-08
TEEN:	9.02E-08	1.24E-07
CHILD:	1.89E-08	2.59E-08
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - MATAGORDA BAY / GULF

	T. BODY	SKIN
ADULT:	4.84E-09	6.64E-09
TEEN:	2.70E-08	3.71E-08
CHILD:	5.65E-09	7.75E-09
INFANT:	0.00E+00	0.00E+00

Table B4-7 Continued

INDIVIDUAL DOSE FACTORS FOR LIQUID EFFLUENTS -- FOR ISOTOPE : TE127M

FOR PATHWAY: FRESHWATER FISH - LITTLE ROBBINS SLOUGH

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	2.78E-03	7.64E-02	2.28E-02	8.15E-03	9.26E-02	5.82E-03	0.00E+00
TEEN:	2.95E-03	6.18E-02	2.48E-02	8.80E-03	1.01E-01	5.90E-03	0.00E+00
CHILD:	3.79E-03	2.59E-02	3.20E-02	8.61E-03	9.11E-02	7.64E-03	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	1.13E-05	3.12E-04	9.29E-05	3.32E-05	3.78E-04	2.38E-05	0.00E+00
TEEN:	1.20E-05	2.52E-04	1.01E-04	3.59E-05	4.10E-04	2.41E-05	0.00E+00
CHILD:	1.55E-05	1.06E-04	1.30E-04	3.51E-05	3.72E-04	3.12E-05	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	1.36E-06	3.74E-05	1.12E-05	3.99E-06	4.53E-05	2.85E-06	0.00E+00
TEEN:	1.44E-06	3.03E-05	1.21E-05	4.31E-06	4.92E-05	2.89E-06	0.00E+00
CHILD:	1.86E-06	1.27E-05	1.57E-05	4.21E-06	4.46E-05	3.74E-06	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	2.70E-05	7.42E-04	2.21E-04	7.91E-05	8.99E-04	5.65E-05	0.00E+00
TEEN:	2.63E-05	5.51E-04	2.21E-04	7.85E-05	8.97E-04	5.26E-05	0.00E+00
CHILD:	3.81E-05	2.60E-04	3.21E-04	8.65E-05	9.16E-04	7.68E-05	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	3.24E-06	8.91E-05	2.66E-05	9.50E-06	1.08E-04	6.79E-06	0.00E+00
TEEN:	3.16E-06	6.62E-05	2.66E-05	9.42E-06	1.08E-04	6.32E-06	0.00E+00
CHILD:	4.58E-06	3.12E-05	3.86E-05	1.04E-05	1.10E-04	9.22E-06	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - LITTLE ROBBINS SLOUGH

	T. BODY	SKIN
ADULT:	1.16E-08	1.37E-08
TEEN:	6.48E-08	7.66E-08
CHILD:	1.35E-08	1.60E-08
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - COLORADO RIVER

	T. BODY	SKIN
ADULT:	1.89E-09	2.24E-09
TEEN:	1.06E-08	1.25E-08
CHILD:	2.21E-09	2.61E-09
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - MATAGORDA BAY / GULF

	T. BODY	SKIN
ADULT:	5.68E-10	6.72E-10
TEEN:	3.17E-09	3.75E-09
CHILD:	6.63E-10	7.83E-10
INFANT:	0.00E+00	0.00E+00

Table B4-7 Continued

INDIVIDUAL DOSE FACTORS FOR LIQUID EFFLUENTS -- FOR ISOTOPE : TE127

FOR PATHWAY: FRESHWATER FISH - LITTLE ROBBINS SLOUGH

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	8.58E-19	3.13E-16	3.97E-18	1.42E-18	1.62E-17	2.94E-18	0.00E+00
TEEN:	9.34E-19	3.35E-16	4.34E-18	1.54E-18	1.76E-17	2.99E-18	0.00E+00
CHILD:	1.20E-18	2.18E-16	5.58E-18	1.50E-18	1.59E-17	3.86E-18	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	3.49E-21	1.27E-18	1.62E-20	5.80E-21	6.58E-20	1.20E-20	0.00E+00
TEEN:	3.80E-21	1.36E-18	1.77E-20	6.27E-21	7.16E-20	1.22E-20	0.00E+00
CHILD:	4.87E-21	8.88E-19	2.27E-20	6.13E-21	6.47E-20	1.57E-20	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	4.21E-22	1.53E-19	1.94E-21	6.98E-22	7.92E-21	1.44E-21	0.00E+00
TEEN:	4.58E-22	1.64E-19	2.13E-21	7.54E-22	8.62E-21	1.47E-21	0.00E+00
CHILD:	5.87E-22	1.07E-19	2.74E-21	7.37E-22	7.78E-21	1.89E-21	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	8.32E-21	3.03E-18	3.85E-20	1.38E-20	1.57E-19	2.85E-20	0.00E+00
TEEN:	8.32E-21	2.99E-18	3.87E-20	1.37E-20	1.57E-19	2.67E-20	0.00E+00
CHILD:	1.20E-20	2.19E-18	5.60E-20	1.51E-20	1.59E-19	3.88E-20	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	1.00E-21	3.65E-19	4.63E-21	1.66E-21	1.89E-20	3.43E-21	0.00E+00
TEEN:	1.00E-21	3.59E-19	4.65E-21	1.65E-21	1.89E-20	3.21E-21	0.00E+00
CHILD:	1.45E-21	2.63E-19	6.74E-21	1.82E-21	1.92E-20	4.66E-21	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - LITTLE ROBBINS SLOUGH

	T. BODY	SKIN
ADULT:	2.38E-23	2.62E-23
TEEN:	1.33E-22	1.46E-22
CHILD:	2.77E-23	3.05E-23
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - COLORADO RIVER

	T. BODY	SKIN
ADULT:	3.87E-24	4.26E-24
TEEN:	2.16E-23	2.38E-23
CHILD:	4.52E-24	4.97E-24
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - MATAGORDA BAY / GULF

	T. BODY	SKIN
ADULT:	1.17E-24	1.28E-24
TEEN:	6.51E-24	7.16E-24
CHILD:	1.36E-24	1.50E-24
INFANT:	0.00E+00	0.00E+00

Table B4-7 Continued

INDIVIDUAL DOSE FACTORS FOR LIQUID EFFLUENTS -- FOR ISOTOPE : TE129M

FOR PATHWAY: FRESHWATER FISH - LITTLE ROBBINS SLOUGH

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	1.58E-03	5.04E-02	1.00E-02	3.73E-03	4.18E-02	3.44E-03	0.00E+00
TEEN:	1.71E-03	4.06E-02	1.08E-02	4.01E-03	4.52E-02	3.49E-03	0.00E+00
CHILD:	2.16E-03	1.70E-02	1.39E-02	3.89E-03	4.09E-02	4.49E-03	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	6.45E-06	2.05E-04	4.08E-05	1.52E-05	1.70E-04	1.40E-05	0.00E+00
TEEN:	6.97E-06	1.65E-04	4.40E-05	1.63E-05	1.84E-04	1.42E-05	0.00E+00
CHILD:	8.80E-06	6.92E-05	5.67E-05	1.58E-05	1.67E-04	1.83E-05	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	7.75E-07	2.47E-05	4.90E-06	1.83E-06	2.04E-05	1.68E-06	0.00E+00
TEEN:	8.37E-07	1.99E-05	5.29E-06	1.96E-06	2.21E-05	1.71E-06	0.00E+00
CHILD:	1.06E-06	8.31E-06	6.82E-06	1.90E-06	2.00E-05	2.20E-06	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	1.54E-05	4.89E-04	9.70E-05	3.62E-05	4.05E-04	3.33E-05	0.00E+00
TEEN:	1.52E-05	3.61E-04	9.63E-05	3.57E-05	4.03E-04	3.11E-05	0.00E+00
CHILD:	2.17E-05	1.70E-04	1.40E-04	3.90E-05	4.10E-04	4.50E-05	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	1.85E-06	5.87E-05	1.17E-05	4.35E-06	4.87E-05	4.01E-06	0.00E+00
TEEN:	1.83E-06	4.35E-05	1.16E-05	4.30E-06	4.84E-05	3.73E-06	0.00E+00
CHILD:	2.61E-06	2.05E-05	1.68E-05	4.69E-06	4.93E-05	5.41E-06	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - LITTLE ROBBINS SLOUGH

	T. BODY	SKIN
ADULT:	6.57E-07	7.68E-07
TEEN:	3.67E-06	4.29E-06
CHILD:	7.66E-07	8.96E-07
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - COLORADO RIVER

	T. BODY	SKIN
ADULT:	1.07E-07	1.25E-07
TEEN:	5.97E-07	6.98E-07
CHILD:	1.25E-07	1.46E-07
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - MATAGORDA BAY / GULF

	T. BODY	SKIN
ADULT:	3.21E-08	3.76E-08
TEEN:	1.79E-07	2.10E-07
CHILD:	3.75E-08	4.38E-08
INFANT:	0.00E+00	0.00E+00

Table B4-7 Continued

INDIVIDUAL DOSE FACTORS FOR LIQUID EFFLUENTS -- FOR ISOTOPE : TE129

FOR PATHWAY: FRESHWATER FISH - LITTLE ROBBINS SLOUGH

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	1.87E-99	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - LITTLE ROBBINS SLOUGH

	T. BODY	SKIN
ADULT:	1.13E-99	1.34E-99
TEEN:	6.30E-99	7.46E-99
CHILD:	1.32E-99	1.56E-99
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - COLORADO RIVER

	T. BODY	SKIN
ADULT:	0.00E+00	0.00E+00
TEEN:	1.03E-99	1.22E-99
CHILD:	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - MATAGORDA BAY / GULF

	T. BODY	SKIN
ADULT:	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00

Table B4-7 Continued

INDIVIDUAL DOSE FACTORS FOR LIQUID EFFLUENTS -- FOR ISOTOPE : TE131M

FOR PATHWAY: FRESHWATER FISH - LITTLE ROBBINS SLOUGH

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	7.73E-09	9.21E-07	1.90E-08	9.27E-09	9.40E-08	1.47E-08	0.00E+00
TEEN:	8.15E-09	7.84E-07	2.04E-08	9.77E-09	1.02E-07	1.47E-08	0.00E+00
CHILD:	9.55E-09	3.64E-07	2.59E-08	8.97E-09	8.68E-08	1.84E-08	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	3.15E-11	3.75E-09	7.73E-11	3.78E-11	3.83E-10	5.98E-11	0.00E+00
TEEN:	3.32E-11	3.19E-09	8.30E-11	3.98E-11	4.15E-10	5.99E-11	0.00E+00
CHILD:	3.89E-11	1.48E-09	1.06E-10	3.65E-11	3.54E-10	7.51E-11	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	3.79E-12	4.51E-10	9.29E-12	4.54E-12	4.60E-11	7.20E-12	0.00E+00
TEEN:	3.99E-12	3.84E-10	9.99E-12	4.79E-12	4.99E-11	7.20E-12	0.00E+00
CHILD:	4.68E-12	1.78E-10	1.27E-11	4.39E-12	4.25E-11	9.04E-12	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	7.50E-11	8.93E-09	1.84E-10	8.99E-11	9.11E-10	1.42E-10	0.00E+00
TEEN:	7.26E-11	6.99E-09	1.82E-10	8.71E-11	9.08E-10	1.31E-10	0.00E+00
CHILD:	9.58E-11	3.65E-09	2.60E-10	9.00E-11	8.71E-10	1.85E-10	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	9.02E-12	1.07E-09	2.21E-11	1.08E-11	1.10E-10	1.71E-11	0.00E+00
TEEN:	8.74E-12	8.41E-10	2.18E-11	1.05E-11	1.09E-10	1.58E-11	0.00E+00
CHILD:	1.15E-11	4.39E-10	3.13E-11	1.08E-11	1.05E-10	2.23E-11	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - LITTLE ROBBINS SLOUGH

	T. BODY	SKIN
ADULT:	5.73E-12	6.75E-12
TEEN:	3.20E-11	3.77E-11
CHILD:	6.68E-12	7.87E-12
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - COLORADO RIVER

	T. BODY	SKIN
ADULT:	9.33E-13	1.10E-12
TEEN:	5.21E-12	6.14E-12
CHILD:	1.09E-12	1.28E-12
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - MATAGORDA BAY / GULF

	T. BODY	SKIN
ADULT:	2.81E-13	3.31E-13
TEEN:	1.57E-12	1.85E-12
CHILD:	3.27E-13	3.86E-13
INFANT:	0.00E+00	0.00E+00

Table B4-7 Continued

INDIVIDUAL DOSE FACTORS FOR LIQUID EFFLUENTS -- FOR ISOTOPE : TE131

FOR PATHWAY: FRESHWATER FISH - LITTLE ROBBINS SLOUGH

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - LITTLE ROBBINS SLOUGH

	T. BODY	SKIN
ADULT:	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - COLORADO RIVER

	T. BODY	SKIN
ADULT:	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - MATAGORDA BAY / GULF

	T. BODY	SKIN
ADULT:	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00

Table B4-7 Continued

INDIVIDUAL DOSE FACTORS FOR LIQUID EFFLUENTS -- FOR ISOTOPE : TE132

FOR PATHWAY: FRESHWATER FISH - LITTLE ROBBINS SLOUGH

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	7.24E-06	3.65E-04	1.19E-05	7.71E-06	7.43E-05	8.52E-06	0.00E+00
TEEN:	7.50E-06	2.52E-04	1.26E-05	7.97E-06	7.64E-05	8.40E-06	0.00E+00
CHILD:	8.39E-06	7.00E-05	1.57E-05	6.95E-06	6.45E-05	1.01E-05	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	2.94E-08	1.48E-06	4.85E-08	3.14E-08	3.02E-07	3.46E-08	0.00E+00
TEEN:	3.05E-08	1.03E-06	5.12E-08	3.24E-08	3.11E-07	3.42E-08	0.00E+00
CHILD:	3.41E-08	2.85E-07	6.39E-08	2.83E-08	2.62E-07	4.12E-08	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	3.54E-09	1.78E-07	5.83E-09	3.77E-09	3.63E-08	4.16E-09	0.00E+00
TEEN:	3.67E-09	1.23E-07	6.15E-09	3.89E-09	3.74E-08	4.11E-09	0.00E+00
CHILD:	4.10E-09	3.42E-08	7.68E-09	3.40E-09	3.15E-08	4.95E-09	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	7.01E-08	3.53E-06	1.15E-07	7.47E-08	7.19E-07	8.25E-08	0.00E+00
TEEN:	6.67E-08	2.24E-06	1.12E-07	7.09E-08	6.80E-07	7.47E-08	0.00E+00
CHILD:	8.41E-08	7.01E-07	1.57E-07	6.96E-08	6.46E-07	1.01E-07	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	8.43E-09	4.25E-07	1.39E-08	8.98E-09	8.65E-08	9.91E-09	0.00E+00
TEEN:	8.02E-09	2.70E-07	1.35E-08	8.52E-09	8.17E-08	8.98E-09	0.00E+00
CHILD:	1.01E-08	8.43E-08	1.89E-08	8.37E-09	7.77E-08	1.22E-08	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - LITTLE ROBBINS SLOUGH

	T. BODY	SKIN
ADULT:	9.23E-10	1.09E-09
TEEN:	5.16E-09	6.07E-09
CHILD:	1.08E-09	1.27E-09
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - COLORADO RIVER

	T. BODY	SKIN
ADULT:	1.50E-10	1.77E-10
TEEN:	8.39E-10	9.87E-10
CHILD:	1.75E-10	2.06E-10
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - MATAGORDA BAY / GULF

	T. BODY	SKIN
ADULT:	4.51E-11	5.31E-11
TEEN:	2.52E-10	2.97E-10
CHILD:	5.27E-11	6.20E-11
INFANT:	0.00E+00	0.00E+00

Table B4-7 Continued

INDIVIDUAL DOSE FACTORS FOR LIQUID EFFLUENTS -- FOR ISOTOPE : I130

FOR PATHWAY: FRESHWATER FISH - LITTLE ROBBINS SLOUGH

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	1.05E-15	2.28E-15	8.98E-16	2.65E-15	4.13E-15	2.25E-13	0.00E+00
TEEN:	1.08E-15	2.07E-15	9.32E-16	2.70E-15	4.16E-15	2.20E-13	0.00E+00
CHILD:	1.19E-15	1.08E-15	1.14E-15	2.30E-15	3.44E-15	2.54E-13	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	1.14E-16	2.48E-16	9.77E-17	2.88E-16	4.50E-16	2.44E-14	0.00E+00
TEEN:	1.17E-16	2.26E-16	1.01E-16	2.93E-16	4.52E-16	2.39E-14	0.00E+00
CHILD:	1.29E-16	1.17E-16	1.24E-16	2.51E-16	3.75E-16	2.76E-14	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	1.37E-17	2.98E-17	1.17E-17	3.46E-17	5.41E-17	2.94E-15	0.00E+00
TEEN:	1.41E-17	2.71E-17	1.22E-17	3.53E-17	5.43E-17	2.88E-15	0.00E+00
CHILD:	1.55E-17	1.41E-17	1.49E-17	3.01E-17	4.50E-17	3.32E-15	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	1.35E-16	2.95E-16	1.16E-16	3.43E-16	5.36E-16	2.91E-14	0.00E+00
TEEN:	1.28E-16	2.47E-16	1.11E-16	3.21E-16	4.94E-16	2.62E-14	0.00E+00
CHILD:	1.59E-16	1.44E-16	1.53E-16	3.09E-16	4.61E-16	3.40E-14	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	1.63E-17	3.55E-17	1.40E-17	4.12E-17	6.43E-17	3.49E-15	0.00E+00
TEEN:	1.54E-17	2.96E-17	1.33E-17	3.86E-17	5.94E-17	3.15E-15	0.00E+00
CHILD:	1.91E-17	1.74E-17	1.84E-17	3.71E-17	5.54E-17	4.09E-15	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - LITTLE ROBBINS SLOUGH

	T. BODY	SKIN
ADULT:	2.51E-17	3.04E-17
TEEN:	1.40E-16	1.70E-16
CHILD:	2.92E-17	3.55E-17
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - COLORADO RIVER

	T. BODY	SKIN
ADULT:	4.09E-18	4.97E-18
TEEN:	2.28E-17	2.77E-17
CHILD:	4.77E-18	5.80E-18
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - MATAGORDA BAY / GULF

	T. BODY	SKIN
ADULT:	1.23E-18	1.49E-18
TEEN:	6.86E-18	8.33E-18
CHILD:	1.43E-18	1.74E-18
INFANT:	0.00E+00	0.00E+00

Table B4-7 Continued

INDIVIDUAL DOSE FACTORS FOR LIQUID EFFLUENTS -- FOR ISOTOPE : I131

FOR PATHWAY: FRESHWATER FISH - LITTLE ROBBINS SLOUGH

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	1.01E-05	4.64E-06	1.23E-05	1.76E-05	3.01E-05	5.76E-03	0.00E+00
TEEN:	9.90E-06	3.64E-06	1.32E-05	1.84E-05	3.17E-05	5.38E-03	0.00E+00
CHILD:	9.54E-06	1.49E-06	1.67E-05	1.68E-05	2.76E-05	5.55E-03	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	1.10E-06	5.04E-07	1.34E-06	1.91E-06	3.28E-06	6.27E-04	0.00E+00
TEEN:	1.08E-06	3.97E-07	1.43E-06	2.00E-06	3.45E-06	5.85E-04	0.00E+00
CHILD:	1.04E-06	1.63E-07	1.82E-06	1.83E-06	3.00E-06	6.04E-04	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	1.31E-07	6.04E-08	1.60E-07	2.29E-07	3.93E-07	7.50E-05	0.00E+00
TEEN:	1.29E-07	4.75E-08	1.72E-07	2.40E-07	4.13E-07	7.01E-05	0.00E+00
CHILD:	1.24E-07	1.95E-08	2.17E-07	2.19E-07	3.59E-07	7.23E-05	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	1.30E-06	6.01E-07	1.59E-06	2.28E-06	3.90E-06	7.46E-04	0.00E+00
TEEN:	1.18E-06	4.34E-07	1.57E-06	2.19E-06	3.78E-06	6.40E-04	0.00E+00
CHILD:	1.28E-06	2.00E-07	2.24E-06	2.25E-06	3.69E-06	7.44E-04	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	1.56E-07	7.19E-08	1.91E-07	2.73E-07	4.67E-07	8.93E-05	0.00E+00
TEEN:	1.41E-07	5.20E-08	1.88E-07	2.63E-07	4.52E-07	7.66E-05	0.00E+00
CHILD:	1.53E-07	2.40E-08	2.68E-07	2.69E-07	4.42E-07	8.91E-05	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - LITTLE ROBBINS SLOUGH

	T. BODY	SKIN
ADULT:	5.52E-08	6.70E-08
TEEN:	3.08E-07	3.74E-07
CHILD:	6.44E-08	7.82E-08
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - COLORADO RIVER

	T. BODY	SKIN
ADULT:	9.01E-09	1.09E-08
TEEN:	5.03E-08	6.11E-08
CHILD:	1.05E-08	1.28E-08
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - MATAGORDA BAY / GULF

	T. BODY	SKIN
ADULT:	2.70E-09	3.28E-09
TEEN:	1.51E-08	1.83E-08
CHILD:	3.15E-09	3.82E-09
INFANT:	0.00E+00	0.00E+00

Table B4-7 Continued

INDIVIDUAL DOSE FACTORS FOR LIQUID EFFLUENTS -- FOR ISOTOPE : I132

FOR PATHWAY: FRESHWATER FISH - LITTLE ROBBINS SLOUGH

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	7.57E-54	4.06E-54	8.09E-54	2.16E-53	3.45E-53	7.57E-52	0.00E+00
TEEN:	7.95E-54	9.65E-54	8.47E-54	2.22E-53	3.49E-53	7.47E-52	0.00E+00
CHILD:	8.85E-54	2.26E-53	1.05E-53	1.92E-53	2.94E-53	8.93E-52	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	8.23E-55	4.42E-55	8.79E-55	2.35E-54	3.75E-54	8.23E-53	0.00E+00
TEEN:	8.65E-55	1.05E-54	9.21E-55	2.41E-54	3.80E-54	8.12E-53	0.00E+00
CHILD:	9.62E-55	2.46E-54	1.14E-54	2.09E-54	3.20E-54	9.71E-53	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	9.92E-56	5.32E-56	1.06E-55	2.83E-55	4.52E-55	9.92E-54	0.00E+00
TEEN:	1.04E-55	1.26E-55	1.11E-55	2.90E-55	4.57E-55	9.78E-54	0.00E+00
CHILD:	1.16E-55	2.97E-55	1.37E-55	2.52E-55	3.86E-55	1.17E-53	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	9.80E-55	5.26E-55	1.05E-54	2.80E-54	4.46E-54	9.80E-53	0.00E+00
TEEN:	9.46E-55	1.15E-54	1.01E-54	2.64E-54	4.15E-54	8.88E-53	0.00E+00
CHILD:	1.19E-54	3.03E-54	1.40E-54	2.58E-54	3.95E-54	1.20E-52	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	1.18E-55	6.34E-56	1.26E-55	3.37E-55	5.38E-55	1.18E-53	0.00E+00
TEEN:	1.14E-55	1.38E-55	1.21E-55	3.18E-55	5.00E-55	1.07E-53	0.00E+00
CHILD:	1.43E-55	3.66E-55	1.69E-55	3.11E-55	4.75E-55	1.44E-53	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - LITTLE ROBBINS SLOUGH

	T. BODY	SKIN
ADULT:	5.55E-53	6.52E-53
TEEN:	3.10E-52	3.64E-52
CHILD:	6.47E-53	7.61E-53
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - COLORADO RIVER

	T. BODY	SKIN
ADULT:	9.05E-54	1.06E-53
TEEN:	5.05E-53	5.94E-53
CHILD:	1.06E-53	1.24E-53
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - MATAGORDA BAY / GULF

	T. BODY	SKIN
ADULT:	2.72E-54	3.21E-54
TEEN:	1.52E-53	1.79E-53
CHILD:	3.18E-54	3.74E-54
INFANT:	0.00E+00	0.00E+00

Table B4-7 Continued

INDIVIDUAL DOSE FACTORS FOR LIQUID EFFLUENTS -- FOR ISOTOPE : I133

FOR PATHWAY: FRESHWATER FISH - LITTLE ROBBINS SLOUGH

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	3.94E-12	1.16E-11	7.43E-12	1.29E-11	2.26E-11	1.90E-09	0.00E+00
TEEN:	4.15E-12	1.03E-11	8.01E-12	1.36E-11	2.38E-11	1.90E-09	0.00E+00
CHILD:	4.76E-12	5.07E-12	1.02E-11	1.26E-11	2.10E-11	2.34E-09	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	4.28E-13	1.26E-12	8.07E-13	1.40E-12	2.45E-12	2.06E-10	0.00E+00
TEEN:	4.50E-13	1.12E-12	8.70E-13	1.48E-12	2.59E-12	2.06E-10	0.00E+00
CHILD:	5.17E-13	5.51E-13	1.11E-12	1.37E-12	2.28E-12	2.54E-10	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	5.15E-14	1.52E-13	9.71E-14	1.69E-13	2.95E-13	2.48E-11	0.00E+00
TEEN:	5.42E-14	1.34E-13	1.05E-13	1.78E-13	3.11E-13	2.48E-11	0.00E+00
CHILD:	6.22E-14	6.63E-14	1.33E-13	1.64E-13	2.74E-13	3.05E-11	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	5.09E-13	1.50E-12	9.61E-13	1.67E-12	2.92E-12	2.46E-10	0.00E+00
TEEN:	4.92E-13	1.22E-12	9.52E-13	1.61E-12	2.83E-12	2.25E-10	0.00E+00
CHILD:	6.37E-13	6.78E-13	1.36E-12	1.68E-12	2.81E-12	3.13E-10	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	6.13E-14	1.81E-13	1.16E-13	2.01E-13	3.51E-13	2.95E-11	0.00E+00
TEEN:	5.92E-14	1.47E-13	1.14E-13	1.94E-13	3.41E-13	2.71E-11	0.00E+00
CHILD:	7.66E-14	8.16E-14	1.64E-13	2.03E-13	3.38E-13	3.76E-11	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - LITTLE ROBBINS SLOUGH

	T. BODY	SKIN
ADULT:	2.83E-14	3.44E-14
TEEN:	1.58E-13	1.92E-13
CHILD:	3.30E-14	4.02E-14
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - COLORADO RIVER

	T. BODY	SKIN
ADULT:	4.61E-15	5.61E-15
TEEN:	2.57E-14	3.13E-14
CHILD:	5.38E-15	6.54E-15
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - MATAGORDA BAY / GULF

	T. BODY	SKIN
ADULT:	1.39E-15	1.69E-15
TEEN:	7.74E-15	9.42E-15
CHILD:	1.62E-15	1.97E-15
INFANT:	0.00E+00	0.00E+00

Table B4-7 Continued

INDIVIDUAL DOSE FACTORS FOR LIQUID EFFLUENTS -- FOR ISOTOPE : I134

FOR PATHWAY: FRESHWATER FISH - LITTLE ROBBINS SLOUGH

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - LITTLE ROBBINS SLOUGH

	T. BODY	SKIN
ADULT:	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - COLORADO RIVER

	T. BODY	SKIN
ADULT:	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - MATAGORDA BAY / GULF

	T. BODY	SKIN
ADULT:	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00

Table B4-7 Continued

INDIVIDUAL DOSE FACTORS FOR LIQUID EFFLUENTS -- FOR ISOTOPE : I135

FOR PATHWAY: FRESHWATER FISH - LITTLE ROBBINS SLOUGH

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	6.43E-24	1.97E-23	6.66E-24	1.74E-23	2.80E-23	1.15E-21	0.00E+00
TEEN:	6.67E-24	1.99E-23	6.99E-24	1.80E-23	2.84E-23	1.16E-21	0.00E+00
CHILD:	7.36E-24	1.19E-23	8.64E-24	1.56E-23	2.39E-23	1.38E-21	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	7.00E-25	2.14E-24	7.24E-25	1.90E-24	3.04E-24	1.25E-22	0.00E+00
TEEN:	7.25E-25	2.17E-24	7.60E-25	1.96E-24	3.09E-24	1.26E-22	0.00E+00
CHILD:	8.00E-25	1.29E-24	9.40E-25	1.69E-24	2.59E-24	1.50E-22	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	8.41E-26	2.57E-25	8.70E-26	2.28E-25	3.65E-25	1.50E-23	0.00E+00
TEEN:	8.71E-26	2.60E-25	9.13E-26	2.35E-25	3.71E-25	1.51E-23	0.00E+00
CHILD:	9.62E-26	1.55E-25	1.13E-25	2.03E-25	3.12E-25	1.80E-23	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	8.33E-25	2.55E-24	8.62E-25	2.26E-24	3.62E-24	1.49E-22	0.00E+00
TEEN:	7.93E-25	2.37E-24	8.31E-25	2.14E-24	3.38E-24	1.38E-22	0.00E+00
CHILD:	9.86E-25	1.59E-24	1.16E-24	2.08E-24	3.20E-24	1.85E-22	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	1.00E-25	3.06E-25	1.04E-25	2.71E-25	4.35E-25	1.79E-23	0.00E+00
TEEN:	9.53E-26	2.85E-25	9.99E-26	2.57E-25	4.06E-25	1.65E-23	0.00E+00
CHILD:	1.18E-25	1.91E-25	1.39E-25	2.50E-25	3.84E-25	2.22E-23	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - LITTLE ROBBINS SLOUGH

	T. BODY	SKIN
ADULT:	4.69E-25	5.47E-25
TEEN:	2.62E-24	3.05E-24
CHILD:	5.47E-25	6.38E-25
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - COLORADO RIVER

	T. BODY	SKIN
ADULT:	7.65E-26	8.92E-26
TEEN:	4.27E-25	4.98E-25
CHILD:	8.92E-26	1.04E-25
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - MATAGORDA BAY / GULF

	T. BODY	SKIN
ADULT:	2.30E-26	2.68E-26
TEEN:	1.28E-25	1.50E-25
CHILD:	2.68E-26	3.13E-26
INFANT:	0.00E+00	0.00E+00

Table B4-7 Continued

INDIVIDUAL DOSE FACTORS FOR LIQUID EFFLUENTS -- FOR ISOTOPE : CS134

FOR PATHWAY: FRESHWATER FISH - LITTLE ROBBINS SLOUGH

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	3.81E-02	8.17E-04	1.96E-02	4.67E-02	1.51E-02	0.00E+00	5.01E-03
TEEN:	2.20E-02	5.89E-04	2.01E-02	4.73E-02	1.50E-02	0.00E+00	5.74E-03
CHILD:	8.39E-03	2.14E-04	2.42E-02	3.98E-02	1.23E-02	0.00E+00	4.42E-03
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	3.81E-03	8.17E-05	1.96E-03	4.67E-03	1.51E-03	0.00E+00	5.01E-04
TEEN:	2.20E-03	5.89E-05	2.01E-03	4.73E-03	1.50E-03	0.00E+00	5.74E-04
CHILD:	8.39E-04	2.14E-05	2.42E-03	3.98E-03	1.23E-03	0.00E+00	4.42E-04
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	5.68E-03	1.22E-04	2.92E-03	6.94E-03	2.25E-03	0.00E+00	7.46E-04
TEEN:	3.00E-03	8.05E-05	2.75E-03	6.47E-03	2.06E-03	0.00E+00	7.85E-04
CHILD:	1.29E-03	3.30E-05	3.73E-03	6.13E-03	1.90E-03	0.00E+00	6.81E-04
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	5.68E-04	1.22E-05	2.92E-04	6.94E-04	2.25E-04	0.00E+00	7.46E-05
TEEN:	3.00E-04	8.05E-06	2.75E-04	6.47E-04	2.06E-04	0.00E+00	7.85E-05
CHILD:	1.29E-04	3.30E-06	3.73E-04	6.13E-04	1.90E-04	0.00E+00	6.81E-05
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - LITTLE ROBBINS SLOUGH

	T. BODY	SKIN
ADULT:	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - COLORADO RIVER

	T. BODY	SKIN
ADULT:	8.09E-04	9.44E-04
TEEN:	4.52E-03	5.27E-03
CHILD:	9.44E-04	1.10E-03
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - MATAGORDA BAY / GULF

	T. BODY	SKIN
ADULT:	2.02E-04	2.36E-04
TEEN:	1.13E-03	1.32E-03
CHILD:	2.36E-04	2.75E-04
INFANT:	0.00E+00	0.00E+00

Table B4-7 Continued

INDIVIDUAL DOSE FACTORS FOR LIQUID EFFLUENTS -- FOR ISOTOPE : CS136

FOR PATHWAY: FRESHWATER FISH - LITTLE ROBBINS SLOUGH

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	TH	LUNG
ADULT:	6.26E-05	9.89E-06	2.20E-05	8.70E-05	4.84E-05	0.0 +00	6.64E-06
TEEN:	5.86E-05	7.02E-06	2.22E-05	8.72E-05	4.75E-05	0.00E+00	7.48E-06
CHILD:	4.65E-05	2.53E-06	2.61E-05	7.19E-05	3.83E-05	0.00E+00	5.71E-06
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	6.26E-06	9.89E-07	2.20E-06	8.70E-06	4.84E-06	0.00E+00	6.64E-07
TEEN:	5.86E-06	7.02E-07	2.22E-06	8.72E-06	4.75E-06	0.00E+00	7.48E-07
CHILD:	4.65E-06	2.53E-07	2.61E-06	7.19E-06	3.83E-06	0.00E+00	5.71E-07
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	9.32E-06	1.47E-06	3.28E-06	1.29E-05	7.20E-06	0.00E+00	9.87E-07
TEEN:	8.01E-06	9.59E-07	3.03E-06	1.19E-05	6.49E-06	0.00E+00	1.02E-06
CHILD:	7.16E-06	3.89E-07	4.03E-06	1.11E-05	5.89E-06	0.00E+00	8.79E-07
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	9.32E-07	1.47E-07	3.28E-07	1.29E-06	7.20E-07	0.00E+00	9.87E-08
TEEN:	8.01E-07	9.59E-08	3.03E-07	1.19E-06	6.49E-07	0.00E+00	1.02E-07
CHILD:	7.16E-07	3.89E-08	4.03E-07	1.11E-06	5.89E-07	0.00E+00	8.79E-08
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - LITTLE ROBBINS SLOUGH

	T. BODY	SKIN
ADULT:	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - COLORADO RIVER

	T. BODY	SKIN
ADULT:	1.99E-07	2.25E-07
TEEN:	1.11E-06	1.26E-06
CHILD:	2.32E-07	2.63E-07
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - MATAGORDA BAY / GULF

	T. BODY	SKIN
ADULT:	4.97E-08	5.63E-08
TEEN:	2.77E-07	3.14E-07
CHILD:	5.79E-08	6.57E-08
INFANT:	0.00E+00	0.00E+00

Table B4-7 Continued

INDIVIDUAL DOSE FACTORS FOR LIQUID EFFLUENTS -- FOR ISOTOPE : CS137

FOR PATHWAY: FRESHWATER FISH - LITTLE ROBBINS SLOUGH

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	7.01E-02	2.07E-03	7.83E-02	1.07E-01	3.63E-02	0.00E+00	1.21E-02
TEEN:	3.88E-02	1.59E-03	8.38E-02	1.11E-01	3.79E-02	0.00E+00	1.47E-02
CHILD:	1.49E-02	6.32E-04	1.06E-01	1.01E-01	3.29E-02	0.00E+00	1.18E-02
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	7.01E-03	2.07E-04	7.83E-03	1.07E-02	3.63E-03	0.00E+00	1.21E-03
TEEN:	3.88E-03	1.59E-04	8.38E-03	1.11E-02	3.79E-03	0.00E+00	1.47E-03
CHILD:	1.49E-03	6.32E-05	1.06E-02	1.01E-02	3.29E-03	0.00E+00	1.18E-03
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	1.04E-02	3.08E-04	1.16E-02	1.59E-02	5.41E-03	0.00E+00	1.80E-03
TEEN:	5.31E-03	2.17E-04	1.15E-02	1.52E-02	5.19E-03	0.00E+00	2.02E-03
CHILD:	2.30E-03	9.74E-05	1.62E-02	1.56E-02	5.07E-03	0.00E+00	1.82E-03
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	1.04E-03	3.08E-05	1.16E-03	1.59E-03	5.41E-04	0.00E+00	1.80E-04
TEEN:	5.31E-04	2.17E-05	1.15E-03	1.52E-03	5.19E-04	0.00E+00	2.02E-04
CHILD:	2.30E-04	9.74E-06	1.62E-03	1.56E-03	5.07E-04	0.00E+00	1.82E-04
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - LITTLE ROBBINS SLOUGH

	T. BODY	SKIN
ADULT:	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - COLORADO RIVER

	T. BODY	SKIN
ADULT:	3.78E-03	4.41E-03
TEEN:	2.11E-02	2.46E-02
CHILD:	4.41E-03	5.15E-03
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - MATAGORDA BAY / GULF

	T. BODY	SKIN
ADULT:	9.45E-04	1.10E-03
TEEN:	5.28E-03	6.16E-03
CHILD:	1.10E-03	1.29E-03
INFANT:	0.00E+00	0.00E+00

Table B4-7 Continued

INDIVIDUAL DOSE FACTORS FOR LIQUID EFFLUENTS -- FOR ISOTOPE : CS138

FOR PATHWAY: FRESHWATER FISH - LITTLE ROBBINS SLOUGH

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - LITTLE ROBBINS SLOUGH

	T. BODY	SKIN
ADULT:	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - COLORADO RIVER

	T. BODY	SKIN
ADULT:	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - MATAGORDA BAY / GULF

	T. BODY	SKIN
ADULT:	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00

Table B4-7 Continued

INDIVIDUAL DOSE FACTORS FOR LIQUID EFFLUENTS -- FOR ISOTOPE : BA139

FOR PATHWAY: FRESHWATER FISH - LITTLE ROBBINS SLOUGH

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	1.61E-87	9.76E-86	5.50E-86	3.92E-89	3.66E-89	0.00E+00	2.22E-89
TEEN:	1.75E-87	5.36E-85	6.01E-86	4.23E-89	3.99E-89	0.00E+00	2.91E-89
CHILD:	2.24E-87	4.46E-84	7.72E-86	4.12E-89	3.60E-89	0.00E+00	2.42E-89
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	6.57E-88	3.98E-86	2.24E-86	1.60E-89	1.49E-89	0.00E+00	9.07E-90
TEEN:	7.14E-88	2.19E-85	2.45E-86	1.72E-89	1.63E-89	0.00E+00	1.19E-89
CHILD:	9.12E-88	1.82E-84	3.15E-86	1.68E-89	1.47E-89	0.00E+00	9.88E-90
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	7.89E-89	4.78E-87	2.70E-87	1.92E-90	1.80E-90	0.00E+00	1.09E-90
TEEN:	8.57E-89	2.63E-86	2.94E-87	2.07E-90	1.95E-90	0.00E+00	1.43E-90
CHILD:	1.10E-88	2.18E-85	3.78E-87	2.02E-90	1.76E-90	0.00E+00	1.19E-90
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	1.56E-87	9.47E-86	5.34E-86	3.81E-89	3.56E-89	0.00E+00	2.16E-89
TEEN:	1.56E-87	4.78E-85	5.36E-86	3.77E-89	3.55E-89	0.00E+00	2.60E-89
CHILD:	2.25E-87	4.48E-84	7.75E-86	4.14E-89	3.61E-89	0.00E+00	2.43E-89
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	1.88E-88	1.14E-86	6.42E-87	4.57E-90	4.27E-90	0.00E+00	2.59E-90
TEEN:	1.88E-88	5.74E-86	6.44E-87	4.53E-90	4.27E-90	0.00E+00	3.12E-90
CHILD:	2.70E-88	5.38E-85	9.31E-87	4.97E-90	4.34E-90	0.00E+00	2.92E-90
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - LITTLE ROBBINS SLOUGH

	T. BODY	SKIN
ADULT:	2.92E-83	3.28E-83
TEEN:	1.63E-82	1.83E-82
CHILD:	3.41E-83	3.83E-83
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - COLORADO RIVER

	T. BODY	SKIN
ADULT:	4.76E-84	5.36E-84
TEEN:	2.66E-83	2.99E-83
CHILD:	5.55E-84	6.25E-84
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - MATAGORDA BAY / GULF

	T. BODY	SKIN
ADULT:	1.43E-84	1.61E-84
TEEN:	7.98E-84	8.98E-84
CHILD:	1.67E-84	1.88E-84
INFANT:	0.00E+00	0.00E+00

Table B4-7 Continued

INDIVIDUAL DOSE FACTORS FOR LIQUID EFFLUENTS -- FOR ISOTOPE : BA140

FOR PATHWAY: FRESHWATER FISH - LITTLE ROBBINS SLOUGH

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	2.69E-06	8.46E-05	4.11E-05	5.16E-08	1.75E-08	0.00E+00	2.95E-08
TEEN:	2.82E-06	6.75E-05	4.38E-05	5.36E-08	1.82E-08	0.00E+00	3.61E-08
CHILD:	3.22E-06	2.80E-05	5.52E-05	4.84E-08	1.58E-08	0.00E+00	2.89E-08
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	1.10E-06	3.44E-05	1.67E-05	2.10E-08	7.14E-09	0.00E+00	1.20E-08
TEEN:	1.15E-06	2.75E-05	1.78E-05	2.18E-08	7.41E-09	0.00E+00	1.47E-08
CHILD:	1.31E-06	1.14E-05	2.25E-05	1.97E-08	6.42E-09	0.00E+00	1.17E-08
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	1.32E-07	4.14E-06	2.01E-06	2.53E-09	8.60E-10	0.00E+00	1.45E-09
TEEN:	1.38E-07	3.31E-06	2.15E-06	2.63E-09	8.91E-10	0.00E+00	1.77E-09
CHILD:	1.58E-07	1.37E-06	2.71E-06	2.37E-09	7.72E-10	0.00E+00	1.41E-09
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	2.61E-06	8.20E-05	3.98E-05	5.00E-08	1.70E-08	0.00E+00	2.86E-08
TEEN:	2.51E-06	6.01E-05	3.90E-05	4.78E-08	1.62E-08	0.00E+00	3.21E-08
CHILD:	3.23E-06	2.81E-05	5.54E-05	4.86E-08	1.58E-08	0.00E+00	2.89E-08
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	3.14E-07	9.87E-06	4.79E-06	6.02E-09	2.05E-09	0.00E+00	3.45E-09
TEEN:	3.02E-07	7.24E-06	4.69E-06	5.75E-09	1.95E-09	0.00E+00	3.87E-09
CHILD:	3.89E-07	3.38E-06	6.67E-06	5.84E-09	1.90E-09	0.00E+00	3.48E-09
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - LITTLE ROBBINS SLOUGH

	T. BODY	SKIN
ADULT:	1.64E-07	1.87E-07
TEEN:	9.15E-07	1.05E-06
CHILD:	1.91E-07	2.19E-07
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - COLORADO RIVER

	T. BODY	SKIN
ADULT:	2.67E-08	3.05E-08
TEEN:	1.49E-07	1.70E-07
CHILD:	3.11E-08	3.56E-08
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - MATAGORDA BAY / GULF

	T. BODY	SKIN
ADULT:	8.03E-09	9.18E-09
TEEN:	4.48E-08	5.13E-08
CHILD:	9.37E-09	1.07E-08
INFANT:	0.00E+00	0.00E+00

Table B4-7 Continued

INDIVIDUAL DOSE FACTORS FOR LIQUID EFFLUENTS -- FOR ISOTOPE : BA141

FOR PATHWAY: FRESHWATER FISH - LITTLE ROBBINS SLOUGH

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - LITTLE ROBBINS SLOUGH

	T. BODY	SKIN
ADULT:	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - COLORADO RIVER

	T. BODY	SKIN
ADULT:	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - MATAGORDA BAY / GULF

	T. BODY	SKIN
ADULT:	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00

Table B4-7 Continued

INDIVIDUAL DOSE FACTORS FOR LIQUID EFFLUENTS -- FOR ISOTOPE : BA142

FOR PATHWAY: FRESHWATER FISH - LITTLE ROBBINS SLOUGH

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - MATAGURDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - LITTLE ROBBINS SLOUGH

	T. BODY	SKIN
ADULT:	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - COLORADO RIVER

	T. BODY	SKIN
ADULT:	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - MATAGORDA BAY / GULF

	T. BODY	SKIN
ADULT:	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00

Table B4-7 Continued

INDIVIDUAL DOSE FACTORS FOR LIQUID EFFLUENTS -- FOR ISOTOPE : LA140

FOR PATHWAY: FRESHWATER FISH - LITTLE ROBBINS SLOUGH

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	2.55E-12	7.09E-07	1.92E-11	9.66E-12	0.00E+00	0.00E+00	0.00E+00
TEEN:	2.66E-12	5.73E-07	2.03E-11	9.98E-12	0.00E+00	0.00E+00	0.00E+00
CHILD:	3.00E-12	2.48E-07	2.54E-11	8.89E-12	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	4.15E-13	1.15E-07	3.12E-12	1.57E-12	0.00E+00	0.00E+00	0.00E+00
TEEN:	4.33E-13	9.34E-08	3.31E-12	1.63E-12	0.00E+00	0.00E+00	0.00E+00
CHILD:	4.88E-13	4.03E-08	4.14E-12	1.45E-12	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	5.00E-14	1.39E-08	3.76E-13	1.89E-13	0.00E+00	0.00E+00	0.00E+00
TEEN:	5.21E-14	1.12E-08	3.98E-13	1.96E-13	0.00E+00	0.00E+00	0.00E+00
CHILD:	5.87E-14	4.86E-09	4.99E-13	1.74E-13	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	3.96E-12	1.10E-06	2.97E-11	1.50E-11	0.00E+00	0.00E+00	0.00E+00
TEEN:	3.78E-12	8.17E-07	2.89E-11	1.42E-11	0.00E+00	0.00E+00	0.00E+00
CHILD:	4.81E-12	3.98E-07	4.08E-11	1.43E-11	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	4.76E-13	1.32E-07	3.58E-12	1.80E-12	0.00E+00	0.00E+00	0.00E+00
TEEN:	4.56E-13	9.84E-08	3.49E-12	1.71E-12	0.00E+00	0.00E+00	0.00E+00
CHILD:	5.79E-13	4.79E-08	4.91E-12	1.72E-12	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - LITTLE ROBBINS SLOUGH

	T. BODY	SKIN
ADULT:	1.33E-10	1.51E-10
TEEN:	7.44E-10	8.43E-10
CHILD:	1.55E-10	1.76E-10
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - COLORADO RIVER

	T. BODY	SKIN
ADULT:	2.17E-11	2.46E-11
TEEN:	1.21E-10	1.37E-10
CHILD:	2.53E-11	2.87E-11
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - MATAGORDA BAY / GULF

	T. BODY	SKIN
ADULT:	6.53E-12	7.40E-12
TEEN:	3.65E-11	4.13E-11
CHILD:	7.62E-12	8.64E-12
INFANT:	0.00E+00	0.00E+00

Table B4-7 Continued

INDIVIDUAL DOSE FACTORS FOR LIQUID EFFLUENTS -- FOR ISOTOPE : LA142

FOR PATHWAY: FRESHWATER FISH - LITTLE ROBBINS SLOUGH

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	1.14E-82	3.33E-78	1.00E-81	4.56E-82	0.00E+00	0.00E+00	0.00E+00
TEEN:	1.18E-82	1.44E-77	1.07E-81	4.75E-82	0.00E+00	0.00E+00	0.00E+00
CHILD:	1.35E-82	8.52E-77	1.35E-81	4.30E-82	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	1.85E-83	5.42E-79	1.63E-82	7.43E-83	0.00E+00	0.00E+00	0.00E+00
TEEN:	1.92E-83	2.35E-78	1.74E-82	7.73E-83	0.00E+00	0.00E+00	0.00E+00
CHILD:	2.19E-83	1.39E-77	2.20E-82	7.00E-83	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	2.22E-84	6.51E-80	1.96E-83	8.92E-84	0.00E+00	0.00E+00	0.00E+00
TEEN:	2.31E-84	2.83E-79	2.09E-83	9.28E-84	0.00E+00	0.00E+00	0.00E+00
CHILD:	2.63E-84	1.67E-78	2.64E-83	8.41E-84	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	1.76E-82	5.16E-78	1.56E-81	7.07E-82	0.00E+00	0.00E+00	0.00E+00
TEEN:	1.68E-82	2.06E-77	1.52E-81	6.76E-82	0.00E+00	0.00E+00	0.00E+00
CHILD:	2.16E-82	1.37E-76	2.16E-81	6.90E-82	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	2.12E-83	6.20E-79	1.87E-82	8.49E-83	0.00E+00	0.00E+00	0.00E+00
TEEN:	2.02E-83	2.47E-78	1.83E-82	8.12E-83	0.00E+00	0.00E+00	0.00E+00
CHILD:	2.60E-83	1.64E-77	2.60E-82	8.29E-83	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - LITTLE ROBBINS SLOUGH

	T. BODY	SKIN
ADULT:	1.67E-76	2.00E-76
TEEN:	9.32E-76	1.12E-75
CHILD:	1.95E-76	2.34E-76
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - COLORADO RIVER

	T. BODY	SKIN
ADULT:	2.72E-77	3.26E-77
TEEN:	1.52E-76	1.82E-76
CHILD:	3.17E-77	3.80E-77
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - MATAGORDA BAY / GULF

	T. BODY	SKIN
ADULT:	8.16E-78	9.79E-78
TEEN:	4.56E-77	5.47E-77
CHILD:	9.52E-78	1.14E-77
INFANT:	0.00E+00	0.00E+00

Table B4-7 Continued

INDIVIDUAL DOSE FACTORS FOR LIQUID EFFLUENTS -- FOR ISOTOPE : CE141

FOR PATHWAY: FRESHWATER FISH - LITTLE ROBBINS SLOUGH

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	1.49E-09	5.02E-05	1.94E-08	1.31E-08	6.10E-09	0.00E+00	0.00E+00
TEEN:	1.61E-09	4.02E-05	2.10E-08	1.40E-08	6.61E-09	0.00E+00	0.00E+00
CHILD:	2.00E-09	1.68E-05	2.71E-08	1.35E-08	5.92E-09	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	2.43E-09	8.18E-05	3.16E-08	2.14E-08	9.93E-09	0.00E+00	0.00E+00
TEEN:	2.63E-09	6.54E-05	3.42E-08	2.29E-08	1.08E-08	0.00E+00	0.00E+00
CHILD:	3.26E-09	2.74E-05	4.41E-08	2.20E-08	9.64E-09	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	2.92E-10	9.84E-06	3.81E-09	2.57E-09	1.20E-09	0.00E+00	0.00E+00
TEEN:	3.16E-10	7.87E-06	4.12E-09	2.75E-09	1.30E-09	0.00E+00	0.00E+00
CHILD:	3.93E-10	3.30E-06	5.31E-09	2.65E-09	1.16E-09	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	3.47E-08	1.17E-03	4.52E-07	3.06E-07	1.42E-07	0.00E+00	0.00E+00
TEEN:	3.45E-08	8.58E-04	4.49E-07	3.00E-07	1.41E-07	0.00E+00	0.00E+00
CHILD:	4.82E-08	4.05E-04	6.51E-07	3.25E-07	1.42E-07	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	4.17E-09	1.41E-04	5.44E-08	3.68E-08	1.71E-08	0.00E+00	0.00E+00
TEEN:	4.15E-09	1.03E-04	5.41E-08	3.61E-08	1.70E-08	0.00E+00	0.00E+00
CHILD:	5.81E-09	4.88E-05	7.84E-08	3.91E-08	1.71E-08	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - LITTLE ROBBINS SLOUGH

	T. BODY	SKIN
ADULT:	4.28E-07	4.83E-07
TEEN:	2.39E-06	2.70E-06
CHILD:	5.00E-07	5.63E-07
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - COLORADO RIVER

	T. BODY	SKIN
ADULT:	6.97E-08	7.86E-08
TEEN:	3.89E-07	4.39E-07
CHILD:	8.13E-08	9.17E-08
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - MATAGORDA BAY / GULF

	T. BODY	SKIN
ADULT:	2.10E-08	2.37E-08
TEEN:	1.17E-07	1.32E-07
CHILD:	2.45E-08	2.76E-08
INFANT:	0.00E+00	0.00E+00

Table B4-7 Continued

INDIVIDUAL DOSE FACTORS FOR LIQUID EFFLUENTS -- FOR ISOTOPE : CE143

FOR PATHWAY: FRESHWATER FISH - LITTLE ROBBINS SLOUGH

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	1.03E-14	3.49E-09	1.26E-13	9.34E-11	4.11E-14	0.00E+00	0.00E+00
TEEN:	1.11E-14	3.00E-09	1.37E-13	9.98E-11	4.48E-14	0.00E+00	0.00E+00
CHILD:	1.38E-14	1.40E-09	1.76E-13	9.54E-11	4.00E-14	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	1.68E-14	5.69E-09	2.06E-13	1.52E-10	6.70E-14	0.00E+00	0.00E+00
TEEN:	1.82E-14	4.89E-09	2.23E-13	1.63E-10	7.29E-14	0.00E+00	0.00E+00
CHILD:	2.25E-14	2.27E-09	2.87E-13	1.55E-10	6.52E-14	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	2.02E-15	6.83E-10	2.47E-14	1.83E-11	8.05E-15	0.00E+00	0.00E+00
TEEN:	2.18E-15	5.87E-10	2.68E-14	1.95E-11	8.76E-15	0.00E+00	0.00E+00
CHILD:	2.70E-15	2.73E-10	3.44E-14	1.87E-11	7.83E-15	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	2.41E-13	8.13E-08	2.94E-12	2.17E-09	9.57E-13	0.00E+00	0.00E+00
TEEN:	2.38E-13	6.41E-08	2.93E-12	2.13E-09	9.57E-13	0.00E+00	0.00E+00
CHILD:	3.33E-13	3.36E-08	4.24E-12	2.30E-09	9.63E-13	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	2.89E-14	9.76E-09	3.53E-13	2.61E-10	1.15E-13	0.00E+00	0.00E+00
TEEN:	2.86E-14	7.70E-09	3.52E-13	2.56E-10	1.15E-13	0.00E+00	0.00E+00
CHILD:	4.00E-14	4.04E-09	5.09E-13	2.76E-10	1.16E-13	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - LITTLE ROBBINS SLOUGH

	T. BODY	SKIN
ADULT:	4.43E-12	5.03E-12
TEEN:	2.47E-11	2.81E-11
CHILD:	5.17E-12	5.87E-12
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - COLORADO RIVER

	T. BODY	SKIN
ADULT:	7.21E-13	8.20E-13
TEEN:	4.03E-12	4.58E-12
CHILD:	8.42E-13	9.57E-13
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - MATAGORDA BAY / GULF

	T. BODY	SKIN
ADULT:	2.17E-13	2.46E-13
TEEN:	1.21E-12	1.37E-12
CHILD:	2.53E-13	2.87E-13
INFANT:	0.00E+00	0.00E+00

Table B4-7 Continued

INDIVIDUAL DOSE FACTORS FOR LIQUID EFFLUENTS -- FOR ISOTOPE : CE144

FOR PATHWAY: FRESHWATER FISH - LITTLE ROBBINS SLOUGH

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	5.64E-07	3.55E-03	1.05E-05	4.39E-06	2.61E-06	0.00E+00	0.00E+00
TEEN:	6.14E-07	2.87E-03	1.14E-05	4.72E-06	2.82E-06	0.00E+00	0.00E+00
CHILD:	7.85E-07	1.20E-03	1.47E-05	4.61E-06	2.55E-06	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	9.17E-07	5.78E-03	1.71E-05	7.14E-06	4.24E-06	0.00E+00	0.00E+00
TEEN:	9.98E-07	4.67E-03	1.86E-05	7.68E-06	4.59E-06	0.00E+00	0.00E+00
CHILD:	1.28E-06	1.96E-03	2.39E-05	7.50E-06	4.15E-06	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	1.11E-07	6.97E-04	2.06E-06	8.61E-07	5.11E-07	0.00E+00	0.00E+00
TEEN:	1.20E-07	5.63E-04	2.24E-06	9.27E-07	5.53E-07	0.00E+00	0.00E+00
CHILD:	1.54E-07	2.36E-04	2.89E-06	9.05E-07	5.01E-07	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	1.31E-05	8.25E-02	2.44E-04	1.02E-04	6.05E-05	0.00E+00	0.00E+00
TEEN:	1.31E-05	6.13E-02	2.44E-04	1.01E-04	6.02E-05	0.00E+00	0.00E+00
CHILD:	1.89E-05	2.89E-02	3.54E-04	1.11E-04	6.14E-05	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	1.58E-06	9.95E-03	2.94E-05	1.23E-05	7.30E-06	0.00E+00	0.00E+00
TEEN:	1.58E-06	7.39E-03	2.94E-05	1.22E-05	7.26E-06	0.00E+00	0.00E+00
CHILD:	2.28E-06	3.49E-03	4.27E-05	1.34E-05	7.40E-06	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - LITTLE ROBBINS SLOUGH

	T. BODY	SKIN
ADULT:	2.24E-05	2.59E-05
TEEN:	1.25E-04	1.45E-04
CHILD:	2.62E-05	3.03E-05
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - COLORADO RIVER

	T. BODY	SKIN
ADULT:	3.65E-06	4.22E-06
TEEN:	2.04E-05	2.36E-05
CHILD:	4.26E-06	4.92E-06
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - MATAGORDA BAY / GULF

	T. BODY	SKIN
ADULT:	1.10E-06	1.27E-06
TEEN:	6.14E-06	7.10E-06
CHILD:	1.28E-06	1.48E-06
INFANT:	0.00E+00	0.00E+00

Table B4-7 Continued

INDIVIDUAL DOSE FACTORS FOR LIQUID EFFLUENTS -- FOR ISOTOPE : PR143

FOR PATHWAY: FRESHWATER FISH - LITTLE ROBBINS SLOUGH

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	6.40E-09	5.66E-04	1.29E-07	5.18E-08	2.99E-08	0.00E+00	0.00E+00
TEEN:	6.97E-09	4.61E-04	1.40E-07	5.59E-08	3.25E-08	0.00E+00	0.00E+00
CHILD:	8.99E-09	1.96E-04	1.81E-07	5.44E-08	2.95E-08	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	1.04E-09	9.21E-05	2.10E-08	8.43E-09	4.87E-09	0.00E+00	0.00E+00
TEEN:	1.14E-09	7.51E-05	2.28E-08	9.11E-09	5.29E-09	0.00E+00	0.00E+00
CHILD:	1.46E-09	3.18E-05	2.95E-08	8.86E-09	4.80E-09	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	1.25E-10	1.11E-05	2.52E-09	1.01E-09	5.84E-10	0.00E+00	0.00E+00
TEEN:	1.36E-10	9.01E-06	2.74E-09	1.09E-09	6.35E-10	0.00E+00	0.00E+00
CHILD:	1.76E-10	3.82E-06	3.54E-09	1.06E-09	5.76E-10	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	9.93E-09	8.77E-04	2.00E-07	8.03E-08	4.64E-08	0.00E+00	0.00E+00
TEEN:	9.93E-09	6.57E-04	2.00E-07	7.97E-08	4.63E-08	0.00E+00	0.00E+00
CHILD:	1.44E-08	3.14E-04	2.91E-07	8.73E-08	4.73E-08	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	1.19E-09	1.05E-04	2.40E-08	9.64E-09	5.56E-09	0.00E+00	0.00E+00
TEEN:	1.19E-09	7.88E-05	2.40E-08	9.56E-09	5.56E-09	0.00E+00	0.00E+00
CHILD:	1.73E-09	3.77E-05	3.49E-08	1.05E-08	5.67E-09	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - LITTLE ROBBINS SLOUGH

	T. BODY	SKIN
ADULT:	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - COLORADO RIVER

	T. BODY	SKIN
ADULT:	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - MATAGORDA BAY / GULF

	T. BODY	SKIN
ADULT:	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00

Table B4-7 Continued

INDIVIDUAL DOSE FACTORS FOR LIQUID EFFLUENTS -- FOR ISOTOPE : PR144

FOR PATHWAY: FRESHWATER FISH - LITTLE ROBBINS SLOUGH

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - LITTLE ROBBINS SLOUGH

	T. BODY	SKIN
ADULT:	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - COLORADO RIVER

	T. BODY	SKIN
ADULT:	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - MATAGORDA BAY / GULF

	T. BODY	SKIN
ADULT:	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00

Table B4-7 Continued

INDIVIDUAL DOSE FACTORS FOR LIQUID EFFLUENTS -- FOR ISOTOPE : ND147

FOR PATHWAY: FRESHWATER FISH - LITTLE ROBBINS SLOUGH

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	4.19E-09	3.36E-04	6.06E-08	7.00E-08	4.09E-08	0.00E+00	0.00E+00
TEEN:	4.48E-09	2.70E-04	6.88E-08	7.49E-08	4.40E-08	0.00E+00	0.00E+00
CHILD:	5.54E-09	1.13E-04	8.83E-08	7.15E-08	3.92E-08	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	6.84E-10	5.49E-05	9.89E-09	1.14E-08	6.68E-09	0.00E+00	0.00E+00
TEEN:	7.32E-10	4.41E-05	1.12E-08	1.22E-08	7.18E-09	0.00E+00	0.00E+00
CHILD:	9.04E-10	1.85E-05	1.44E-08	1.17E-08	6.41E-09	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	8.22E-11	6.59E-06	1.19E-09	1.37E-09	8.03E-10	0.00E+00	0.00E+00
TEEN:	8.79E-11	5.30E-06	1.35E-09	1.47E-09	8.62E-10	0.00E+00	0.00E+00
CHILD:	1.09E-10	2.22E-06	1.73E-09	1.40E-09	7.70E-10	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	6.51E-09	5.23E-04	9.42E-08	1.09E-07	6.36E-08	0.00E+00	0.00E+00
TEEN:	6.40E-09	3.86E-04	9.83E-08	1.07E-07	6.28E-08	0.00E+00	0.00E+00
CHILD:	8.91E-09	1.82E-04	1.42E-07	1.15E-07	6.31E-08	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	7.82E-10	6.28E-05	1.13E-08	1.31E-08	7.64E-09	0.00E+00	0.00E+00
TEEN:	7.69E-10	4.63E-05	1.18E-08	1.28E-08	7.54E-09	0.00E+00	0.00E+00
CHILD:	1.07E-09	2.19E-05	1.71E-08	1.38E-08	7.58E-09	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - LITTLE ROBBINS SLOUGH

	T. BODY	SKIN
ADULT:	5.19E-08	6.22E-08
TEEN:	2.90E-07	3.47E-07
CHILD:	6.05E-08	7.26E-08
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - COLORADO RIVER

	T. BODY	SKIN
ADULT:	8.46E-09	1.02E-08
TEEN:	4.73E-08	5.67E-08
CHILD:	9.87E-09	1.18E-08
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - MATAGORDA BAY / GULF

	T. BODY	SKIN
ADULT:	2.54E-09	3.05E-09
TEEN:	1.42E-08	1.70E-08
CHILD:	2.97E-09	3.56E-09
INFANT:	0.00E+00	0.00E+00

Table B4-7 Continued

INDIVIDUAL DOSE FACTORS FOR LIQUID EFFLUENTS -- FOR ISOTOPE : W187

FOR PATHWAY: FRESHWATER FISH - LITTLE ROBBINS SLOUGH

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	9.00E-11	8.43E-08	3.08E-10	2.58E-10	0.00E+00	0.00E+00	0.00E+00
TEEN:	9.50E-11	7.34E-08	3.33E-10	2.71E-10	0.00E+00	0.00E+00	0.00E+00
CHILD:	1.12E-10	3.51E-08	4.22E-10	2.50E-10	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	3.67E-13	3.44E-10	1.26E-12	1.05E-12	0.00E+00	0.00E+00	0.00E+00
TEEN:	3.88E-13	2.99E-10	1.36E-12	1.11E-12	0.00E+00	0.00E+00	0.00E+00
CHILD:	4.57E-13	1.43E-10	1.72E-12	1.02E-12	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	4.42E-14	4.14E-11	1.51E-13	1.26E-13	0.00E+00	0.00E+00	0.00E+00
TEEN:	4.66E-14	3.60E-11	1.63E-13	1.33E-13	0.00E+00	0.00E+00	0.00E+00
CHILD:	5.50E-14	1.72E-11	2.07E-13	1.23E-13	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	8.75E-14	8.19E-11	2.99E-13	2.50E-13	0.00E+00	0.00E+00	0.00E+00
TEEN:	8.48E-14	6.55E-11	2.97E-13	2.42E-13	0.00E+00	0.00E+00	0.00E+00
CHILD:	1.13E-13	3.53E-11	4.24E-13	2.51E-13	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	1.05E-14	9.86E-12	3.60E-14	3.01E-14	0.00E+00	0.00E+00	0.00E+00
TEEN:	1.02E-14	7.88E-12	3.57E-14	2.91E-14	0.00E+00	0.00E+00	0.00E+00
CHILD:	1.35E-14	4.24E-12	5.10E-14	3.02E-14	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - LITTLE ROBBINS SLOUGH

	T. BODY	SKIN
ADULT:	1.76E-13	2.05E-13
TEEN:	9.85E-13	1.14E-12
CHILD:	2.06E-13	2.39E-13
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - COLORADO RIVER

	T. BODY	SKIN
ADULT:	2.88E-14	3.34E-14
TEEN:	1.61E-13	1.87E-13
CHILD:	3.38E-14	3.90E-14
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - MATAGORDA BAY / GULF

	T. BODY	SKIN
ADULT:	8.66E-15	1.01E-14
TEEN:	4.83E-14	5.61E-14
CHILD:	1.01E-14	1.17E-14
INFANT:	0.00E+00	0.00E+00

Table B4-7 Continued

INDIVIDUAL DOSE FACTORS FOR LIQUID EFFLUENTS -- FOR ISOTOPE : NP239

FOR PATHWAY: FRESHWATER FISH - LITTLE ROBBINS SLOUGH

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	1.64E-12	6.12E-07	3.03E-11	2.98E-12	9.30E-12	0.00E+00	0.00E+00
TEEN:	1.79E-12	5.18E-07	3.42E-11	3.22E-12	1.01E-11	0.00E+00	0.00E+00
CHILD:	2.22E-12	2.34E-07	4.40E-11	3.16E-12	9.13E-12	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	2.68E-13	9.98E-08	4.95E-12	4.86E-13	1.52E-12	0.00E+00	0.00E+00
TEEN:	2.92E-13	8.46E-08	5.58E-12	5.26E-13	1.65E-12	0.00E+00	0.00E+00
CHILD:	3.62E-13	3.81E-08	7.17E-12	5.15E-13	1.49E-12	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER FISH - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	3.22E-14	1.20E-08	5.94E-13	5.84E-14	1.82E-13	0.00E+00	0.00E+00
TEEN:	3.50E-14	1.01E-08	6.69E-13	6.31E-14	1.98E-13	0.00E+00	0.00E+00
CHILD:	4.34E-14	4.57E-09	8.61E-13	6.18E-14	1.79E-13	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - COLORADO RIVER

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	6.39E-14	2.38E-08	1.18E-12	1.16E-13	3.61E-13	0.00E+00	0.00E+00
TEEN:	6.39E-14	1.85E-08	1.22E-12	1.15E-13	3.61E-13	0.00E+00	0.00E+00
CHILD:	8.92E-14	9.39E-09	1.77E-12	1.27E-13	3.67E-13	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SALTWATER INVERTABRATES - MATAGORDA BAY / GULF

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG
ADULT:	7.66E-15	2.85E-09	1.41E-13	1.39E-14	4.34E-14	0.00E+00	0.00E+00
TEEN:	7.67E-15	2.22E-09	1.46E-13	1.38E-14	4.33E-14	0.00E+00	0.00E+00
CHILD:	1.07E-14	1.13E-09	2.12E-13	1.52E-14	4.40E-14	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - LITTLE ROBBINS SLOUGH

	T. BODY	SKIN
ADULT:	8.75E-11	1.01E-11
TEEN:	4.88E-10	5.65E-11
CHILD:	1.02E-10	1.18E-11
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - COLORADO RIVER

	T. BODY	SKIN
ADULT:	1.43E-11	1.65E-12
TEEN:	7.97E-11	9.22E-12
CHILD:	1.66E-11	1.93E-12
INFANT:	0.00E+00	0.00E+00

FOR PATHWAY: SHORELINE EXPOSURE - MATAGORDA BAY / GULF

	T. BODY	SKIN
ADULT:	4.28E-12	4.96E-13
TEEN:	2.39E-11	2.77E-12
CHILD:	4.99E-12	5.78E-13
INFANT:	0.00E+00	0.00E+00

Table B4-7 Continued
INDIVIDUAL DOSE FACTORS FOR GASEOUS EFFLUENTS -- FOR ISOTOPE : H3

FOR PATHWAY: PLUME

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: GROUND

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: VEGETABLE

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	4.18E+01	4.18E+01	0.00E+00	4.18E+01	4.18E+01	4.18E+01	4.18E+01	0.00E+00
TEEN:	4.78E+01	4.78E+01	0.00E+00	4.78E+01	4.78E+01	4.78E+01	4.78E+01	0.00E+00
CHILD:	7.41E+01	7.41E+01	0.00E+00	7.41E+01	7.41E+01	7.41E+01	7.41E+01	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: MEAT

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	6.04E+00	6.04E+00	0.00E+00	6.04E+00	6.04E+00	6.04E+00	6.04E+00	0.00E+00
TEEN:	3.60E+00	3.60E+00	0.00E+00	3.60E+00	3.60E+00	3.60E+00	3.60E+00	0.00E+00
CHILD:	4.35E+00	4.35E+00	0.00E+00	4.35E+00	4.35E+00	4.35E+00	4.35E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: COW MILK

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	1.42E+01	1.42E+01	0.00E+00	1.42E+01	1.42E+01	1.42E+01	1.42E+01	0.00E+00
TEEN:	1.85E+01	1.85E+01	0.00E+00	1.85E+01	1.85E+01	1.85E+01	1.85E+01	0.00E+00
CHILD:	2.93E+01	2.93E+01	0.00E+00	2.93E+01	2.93E+01	2.93E+01	2.93E+01	0.00E+00
INFANT:	4.44E+01	4.44E+01	0.00E+00	4.44E+01	4.44E+01	4.44E+01	4.44E+01	0.00E+00

FOR PATHWAY: GOAT MILK

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	2.90E+01	2.90E+01	0.00E+00	2.90E+01	2.90E+01	2.90E+01	2.90E+01	0.00E+00
TEEN:	3.78E+01	3.78E+01	0.00E+00	3.78E+01	3.78E+01	3.78E+01	3.78E+01	0.00E+00
CHILD:	5.97E+01	5.97E+01	0.00E+00	5.97E+01	5.97E+01	5.97E+01	5.97E+01	0.00E+00
INFANT:	9.06E+01	9.06E+01	0.00E+00	9.06E+01	9.06E+01	9.06E+01	9.06E+01	0.00E+00

FOR PATHWAY: INHALATION

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	4.01E+01	4.01E+01	0.00E+00	4.01E+01	4.01E+01	4.01E+01	4.01E+01	0.00E+00
TEEN:	4.03E+01	4.03E+01	0.00E+00	4.03E+01	4.03E+01	4.03E+01	4.03E+01	0.00E+00
CHILD:	3.57E+01	3.57E+01	0.00E+00	3.57E+01	3.57E+01	3.57E+01	3.57E+01	0.00E+00
INFANT:	2.05E+01	2.05E+01	0.00E+00	2.05E+01	2.05E+01	2.05E+01	2.05E+01	0.00E+00

Table B4-7 Continued

INDIVIDUAL DOSE FACTORS FOR GASEOUS EFFLUENTS -- FOR ISOTOPE : C14

FOR PATHWAY: PLUME

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: GROUND

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: VEGETABLE

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	5.68E+03	5.68E+03	2.84E+04	5.68E+03	5.68E+03	5.68E+03	5.68E+03	0.00E+00
TEEN:	9.22E+03	9.22E+03	4.61E+04	9.22E+03	9.22E+03	9.22E+03	9.22E+03	0.00E+00
CHILD:	2.22E+04	2.22E+04	1.11E+05	2.22E+04	2.22E+04	2.22E+04	2.22E+04	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: MEAT

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	2.11E+03	2.11E+03	1.06E+04	2.11E+03	2.11E+03	2.11E+03	2.11E+03	0.00E+00
TEEN:	1.78E+03	1.78E+03	8.91E+03	1.78E+03	1.78E+03	1.78E+03	1.78E+03	0.00E+00
CHILD:	3.35E+03	3.35E+03	1.68E+04	3.35E+03	3.35E+03	3.35E+03	3.35E+03	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: COW MILK

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	2.30E+03	2.30E+03	1.15E+04	2.30E+03	2.30E+03	2.30E+03	2.30E+03	0.00E+00
TEEN:	4.25E+03	4.25E+03	2.12E+04	4.25E+03	4.25E+03	4.25E+03	4.25E+03	0.00E+00
CHILD:	1.04E+04	1.04E+04	5.22E+04	1.04E+04	1.04E+04	1.04E+04	1.04E+04	0.00E+00
INFANT:	2.18E+04	2.18E+04	1.02E+05	2.18E+04	2.18E+04	2.18E+04	2.18E+04	0.00E+00

FOR PATHWAY: GOAT MILK

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	2.30E+03	2.30E+03	1.15E+04	2.30E+03	2.30E+03	2.30E+03	2.30E+03	0.00E+00
TEEN:	4.25E+03	4.25E+03	2.12E+04	4.25E+03	4.25E+03	4.25E+03	4.25E+03	0.00E+00
CHILD:	1.04E+04	1.04E+04	5.22E+04	1.04E+04	1.04E+04	1.04E+04	1.04E+04	0.00E+00
INFANT:	2.18E+04	2.18E+04	1.02E+05	2.18E+04	2.18E+04	2.18E+04	2.18E+04	0.00E+00

FOR PATHWAY: INHALATION

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	1.08E+02	1.08E+02	5.76E+02	1.08E+02	1.08E+02	1.08E+02	1.08E+02	0.00E+00
TEEN:	1.54E+02	1.54E+02	8.24E+02	1.54E+02	1.54E+02	1.54E+02	1.54E+02	0.00E+00
CHILD:	2.13E+02	2.13E+02	1.14E+03	2.13E+02	2.13E+02	2.13E+02	2.13E+02	0.00E+00
INFANT:	1.68E+02	1.68E+02	8.39E+02	1.68E+02	1.68E+02	1.68E+02	1.68E+02	0.00E+00

Table B4-7 Continued

INDIVIDUAL DOSE FACTORS FOR GASEOUS EFFLUENTS -- FOR ISOTOPE : AR41

FOR PATHWAY: PLUME

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	1.96E+02	1.96E+02	1.96E+02	1.96E+02	1.96E+02	1.96E+02	1.96E+02	3.14E+02
TEEN:	1.96E+02	1.96E+02	1.96E+02	1.96E+02	1.96E+02	1.96E+02	1.96E+02	3.14E+02
CHILD:	1.96E+02	1.96E+02	1.96E+02	1.96E+02	1.96E+02	1.96E+02	1.96E+02	3.14E+02
INFANT:	1.96E+02	1.96E+02	1.96E+02	1.96E+02	1.96E+02	1.96E+02	1.96E+02	3.14E+02

FOR PATHWAY: GROUND

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: VEGETABLE

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: MEAT

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: COW MILK

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: GOAT MILK

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: INHALATION

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table B4-7 Continued
INDIVIDUAL DOSE FACTORS FOR GASEOUS EFFLUENTS -- FOR ISOTOPE : KR83M

FOR PATHWAY: PLUME

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	1.68E-03	1.68E-03	1.68E-03	1.68E-03	1.68E-03	1.68E-03	9.39E-02	4.75E-01
TEEN:	1.68E-03	1.68E-03	1.68E-03	1.68E-03	1.68E-03	1.68E-03	9.39E-02	4.75E-01
CHILD:	1.68E-03	1.68E-03	1.68E-03	1.68E-03	1.68E-03	1.68E-03	9.39E-02	4.75E-01
INFANT:	1.68E-03	1.68E-03	1.68E-03	1.68E-03	1.68E-03	1.68E-03	9.39E-02	4.75E-01

FOR PATHWAY: GROUND

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: VEGETABLE

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: MEAT

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: COW MILK

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: GOAT MILK

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: INHALATION

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table B4-7 Continued
INDIVIDUAL DOSE FACTORS FOR GASEOUS EFFLUENTS -- FOR ISOTOPE : KR85M

FOR PATHWAY: PLUME

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	2.60E+01	2.60E+01	2.60E+01	2.60E+01	2.60E+01	2.60E+01	2.66E+01	7.66E+01
TEEN:	2.60E+01	2.60E+01	2.60E+01	2.60E+01	2.60E+01	2.60E+01	2.66E+01	7.66E+01
CHILD:	2.60E+01	2.60E+01	2.60E+01	2.60E+01	2.60E+01	2.60E+01	2.66E+01	7.66E+01
INFANT:	2.60E+01	2.60E+01	2.60E+01	2.60E+01	2.60E+01	2.60E+01	2.66E+01	7.66E+01

FOR PATHWAY: GROUND

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: VEGETABLE

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: MEAT

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: COW MILK

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: GOAT MILK

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: INHALATION

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table B4-7 Continued

INDIVIDUAL DOSE FACTORS FOR GASEOUS EFFLUENTS -- FOR ISOTOPE : KR85

FOR PATHWAY: PLUME

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	3.57E-01	3.57E-01	3.57E-01	3.57E-01	3.57E-01	3.57E-01	9.50E-01	4.29E+01
TEEN:	3.57E-01	3.57E-01	3.57E-01	3.57E-01	3.57E-01	3.57E-01	9.50E-01	4.29E+01
CHILD:	3.57E-01	3.57E-01	3.57E-01	3.57E-01	3.57E-01	3.57E-01	9.50E-01	4.29E+01
INFANT:	3.57E-01	3.57E-01	3.57E-01	3.57E-01	3.57E-01	3.57E-01	9.50E-01	4.29E+01

FOR PATHWAY: GROUND

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: VEGETABLE

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: MEAT

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: COW MILK

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: GOAT MILK

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: INHALATION

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table B4-7 Continued

INDIVIDUAL DOSE FACTORS FOR GASEOUS EFFLUENTS -- FOR ISOTOPE : KR87

FOR PATHWAY: PLUME

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	1.31E+02	1.31E+02	1.31E+02	1.31E+02	1.31E+02	1.31E+02	1.35E+02	4.60E+02
TEEN:	1.31E+02	1.31E+02	1.31E+02	1.31E+02	1.31E+02	1.31E+02	1.35E+02	4.60E+02
CHILD:	1.31E+02	1.31E+02	1.31E+02	1.31E+02	1.31E+02	1.31E+02	1.35E+02	4.60E+02
INFANT:	1.31E+02	1.31E+02	1.31E+02	1.31E+02	1.31E+02	1.31E+02	1.35E+02	4.60E+02

FOR PATHWAY: GROUND

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: VEGETABLE

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: MEAT

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: COW MILK

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: GOAT MILK

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: INHALATION

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table B4-7 Continued
INDIVIDUAL DOSE FACTORS FOR GASEOUS EFFLUENTS -- FOR ISOTOPE : KR88

FOR PATHWAY: PLUME

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	3.26E+02	3.26E+02	3.26E+02	3.26E+02	3.26E+02	3.26E+02	3.27E+02	4.50E+02
TEEN:	3.26E+02	3.26E+02	3.26E+02	3.26E+02	3.26E+02	3.26E+02	3.27E+02	4.50E+02
CHILD:	3.26E+02	3.26E+02	3.26E+02	3.26E+02	3.26E+02	3.26E+02	3.27E+02	4.50E+02
INFANT:	3.26E+02	3.26E+02	3.26E+02	3.26E+02	3.26E+02	3.26E+02	3.27E+02	4.50E+02

FOR PATHWAY: GROUND

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: VEGETABLE

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: MEAT

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: COW MILK

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: GOAT MILK

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: INHALATION

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table B4-7 Continued
INDIVIDUAL DOSE FACTORS FOR GASEOUS EFFLUENTS -- FOR ISOTOPE : KR89

FOR PATHWAY: PLUME

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	3.68E+02	3.68E+02	3.68E+02	3.68E+02	3.68E+02	3.68E+02	3.72E+02	7.46E+02
TEEN:	3.68E+02	3.68E+02	3.68E+02	3.68E+02	3.68E+02	3.68E+02	3.72E+02	7.46E+02
CHILD:	3.68E+02	3.68E+02	3.68E+02	3.68E+02	3.68E+02	3.68E+02	3.72E+02	7.46E+02
INFANT:	3.68E+02	3.68E+02	3.68E+02	3.68E+02	3.68E+02	3.68E+02	3.72E+02	7.46E+02

FOR PATHWAY: GROUND

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: VEGETABLE

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: MEAT

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: COW MILK

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: GOAT MILK

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: INHALATION

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table B4-7 Continued
INDIVIDUAL DOSE FACTORS FOR GASEOUS EFFLUENTS -- FOR ISOTOPE : KR90

FOR PATHWAY: PLUME

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	3.46E+02	3.46E+02	3.46E+02	3.46E+02	3.46E+02	3.46E+02	3.49E+02	6.33E+02
TEEN:	3.46E+02	3.46E+02	3.46E+02	3.46E+02	3.46E+02	3.46E+02	3.49E+02	6.33E+02
CHILD:	3.46E+02	3.46E+02	3.46E+02	3.46E+02	3.46E+02	3.46E+02	3.49E+02	6.33E+02
INFANT:	3.46E+02	3.46E+02	3.46E+02	3.46E+02	3.46E+02	3.46E+02	3.49E+02	6.33E+02

FOR PATHWAY: GROUND

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: VEGETABLE

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: MEAT

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: COW MILK

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: GOAT MILK

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: INHALATION

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: PLUME

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	2.03E+00	2.03E+00	2.03E+00	2.03E+00	2.03E+00	2.03E+00	2.38E+00	1.39E+01
TEEN:	2.03E+00	2.03E+00	2.03E+00	2.03E+00	2.03E+00	2.03E+00	2.38E+00	1.39E+01
CHILD:	2.03E+00	2.03E+00	2.03E+00	2.03E+00	2.03E+00	2.03E+00	2.38E+00	1.89E+01
INFANT:	2.03E+00	2.03E+00	2.03E+00	2.03E+00	2.03E+00	2.03E+00	2.38E+00	1.39E+01

FOR PATHWAY: GROUND

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: VEGETABLE

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: MEAT

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: COW MILK

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: GOAT MILK

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: INHALATION

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table B4-7 Continued

INDIVIDUAL DOSE FACTORS FOR GASEOUS EFFLUENTS -- FOR ISOTOPE : XE133M

FOR PATHWAY: PLUME

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	5.57E+00	5.57E+00	5.57E+00	5.57E+00	5.57E+00	5.57E+00	6.03E+00	3.96E+01
TEEN:	5.57E+00	5.57E+00	5.57E+00	5.57E+00	5.57E+00	5.57E+00	6.03E+00	3.96E+01
CHILD:	5.57E+00	5.57E+00	5.57E+00	5.57E+00	5.57E+00	5.57E+00	6.03E+00	3.96E+01
INFANT:	5.57E+00	5.57E+00	5.57E+00	5.57E+00	5.57E+00	5.57E+00	6.03E+00	3.96E+01

FOR PATHWAY: GROUND

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: VEGETABLE

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: MEAT

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: COW MILK

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: GOAT MILK

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: INHALATION

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table B4-7 Continued
INDIVIDUAL DOSE FACTORS FOR GASEOUS EFFLUENTS -- FOR ISOTOPE : XE133

FOR PATHWAY: PLUME

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	6.52E+00	6.52E+00	6.52E+00	6.52E+00	6.52E+00	6.52E+00	6.86E+00	1.84E+01
TEEN:	6.52E+00	6.52E+00	6.52E+00	6.52E+00	6.52E+00	6.52E+00	6.86E+00	1.84E+01
CHILD:	6.52E+00	6.52E+00	6.52E+00	6.52E+00	6.52E+00	6.52E+00	6.86E+00	1.84E+01
INFANT:	6.52E+00	6.52E+00	6.52E+00	6.52E+00	6.52E+00	6.52E+00	6.86E+00	1.84E+01

FOR PATHWAY: GROUND

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: VEGETABLE

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: MEAT

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: COW MILK

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: GOAT MILK

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: INHALATION

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table B4-7 Continued
INDIVIDUAL DOSE FACTORS FOR GASEOUS EFFLUENTS -- FOR ISOTOPE : XE135M

FOR PATHWAY: PLUME

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	6.92E+01	6.92E+01	6.92E+01	6.92E+01	6.92E+01	6.92E+01	6.95E+01	1.05E+02
TEEN:	6.92E+01	6.92E+01	6.92E+01	6.92E+01	6.92E+01	6.92E+01	6.95E+01	1.05E+02
CHILD:	6.92E+01	6.92E+01	6.92E+01	6.92E+01	6.92E+01	6.92E+01	6.95E+01	1.05E+02
INFANT:	6.92E+01	6.92E+01	6.92E+01	6.92E+01	6.92E+01	6.92E+01	6.95E+01	1.05E+02

FOR PATHWAY: GROUND

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: VEGETABLE

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: MEAT

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: COW MILK

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: GOAT MILK

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: INHALATION

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table B4-7 Continued
INDIVIDUAL DOSE FACTORS FOR GASEOUS EFFLUENTS -- FOR ISOTOPE : XE135

FOR PATHWAY: PLUME

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	4.02E+01	4.02E+01	4.02E+01	4.02E+01	4.02E+01	4.02E+01	4.09E+01	1.06E+02
TEEN:	4.02E+01	4.02E+01	4.02E+01	4.02E+01	4.02E+01	4.02E+01	4.09E+01	1.06E+02
CHILD:	4.02E+01	4.02E+01	4.02E+01	4.02E+01	4.02E+01	4.02E+01	4.09E+01	1.06E+02
INFANT:	4.02E+01	4.02E+01	4.02E+01	4.02E+01	4.02E+01	4.02E+01	4.09E+01	1.06E+02

FOR PATHWAY: GROUND

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: VEGETABLE

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: MEAT

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: COW MILK

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: GOAT MILK

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: INHALATION

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table B4-7 Continued
INDIVIDUAL DOSE FACTORS FOR GASEOUS EFFLUENTS -- FOR ISOTOPE : XE137

FOR PATHWAY: PLUME

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	3.15E+01	3.15E+01	3.15E+01	3.15E+01	3.15E+01	3.15E+01	3.54E+01	4.24E+02
TEEN:	3.15E+01	3.15E+01	3.15E+01	3.15E+01	3.15E+01	3.15E+01	3.54E+01	4.24E+02
CHILD:	3.15E+01	3.15E+01	3.15E+01	3.15E+01	3.15E+01	3.15E+01	3.54E+01	4.24E+02
INFANT:	3.15E+01	3.15E+01	3.15E+01	3.15E+01	3.15E+01	3.15E+01	3.54E+01	4.24E+02

FOR PATHWAY: GROUND

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: VEGETABLE

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: MEAT

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: COW MILK

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: GOAT MILK

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: INHALATION

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table B4-7 Continued
INDIVIDUAL DOSE FACTORS FOR GASEOUS EFFLUENTS — FOR ISOTOPE : XE138

FOR PATHWAY: PLUME

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	1.96E+02	1.96E+02	1.96E+02	1.96E+02	1.96E+02	1.96E+02	1.98E+02	3.58E+02
TEEN:	1.96E+02	1.96E+02	1.96E+02	1.96E+02	1.96E+02	1.96E+02	1.98E+02	3.58E+02
CHILD:	1.96E+02	1.96E+02	1.96E+02	1.96E+02	1.96E+02	1.96E+02	1.96E+02	3.58E+02
INFANT:	1.96E+02	1.96E+02	1.96E+02	1.96E+02	1.96E+02	1.96E+02	1.93E+02	3.58E+02

FOR PATHWAY: GROUND

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: VEGETABLE

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: MEAT

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: COW MILK

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: GOAT MILK

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: INHALATION

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table B4-7 Continued

INDIVIDUAL DOSE FACTORS FOR GASEOUS EFFLUENTS -- FOR ISOTOPE : CR51

FOR PATHWAY: PLUME

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: GROUND

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	1.43E+05	1.43E+05	1.43E+05	1.43E+05	1.43E+05	1.43E+05	1.43E+05	1.69E+05
TEEN:	1.43E+05	1.43E+05	1.43E+05	1.43E+05	1.43E+05	1.43E+05	1.43E+05	1.69E+05
CHILD:	1.43E+05	1.43E+05	1.43E+05	1.43E+05	1.43E+05	1.43E+05	1.43E+05	1.69E+05
INFANT:	1.43E+05	1.43E+05	1.43E+05	1.43E+05	1.43E+05	1.43E+05	1.43E+05	1.69E+05

FOR PATHWAY: VEGETABLE

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	1.39E+03	3.50E+05	0.00E+00	0.00E+00	3.06E+02	8.31E+02	1.84E+03	0.00E+00
TEEN:	1.85E+03	3.10E+05	0.00E+00	0.00E+00	4.05E+02	1.03E+03	2.64E+03	0.00E+00
CHILD:	3.51E+03	1.86E+05	0.00E+00	0.00E+00	5.32E+02	1.95E+03	3.56E+03	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: MEAT

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	1.91E+02	4.81E+04	0.00E+00	0.00E+00	4.21E+01	1.14E+02	2.54E+02	0.00E+00
TEEN:	1.53E+02	2.57E+04	0.00E+00	0.00E+00	3.35E+01	8.49E+01	2.18E+02	0.00E+00
CHILD:	2.38E+02	1.26E+04	0.00E+00	0.00E+00	3.61E+01	1.32E+02	2.42E+02	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: COW MILK

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	7.74E+02	1.95E+05	0.00E+00	0.00E+00	1.70E+02	4.62E+02	1.03E+03	0.00E+00
TEEN:	1.35E+03	2.27E+05	0.00E+00	0.00E+00	2.96E+02	7.51E+02	1.93E+03	0.00E+00
CHILD:	2.76E+03	1.46E+05	0.00E+00	0.00E+00	4.18E+02	1.53E+03	2.79E+03	0.00E+00
INFANT:	4.37E+03	1.27E+05	0.00E+00	0.00E+00	6.22E+02	2.85E+03	5.54E+03	0.00E+00

FOR PATHWAY: GOAT MILK

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	9.28E+01	2.33E+04	0.00E+00	0.00E+00	2.05E+01	5.55E+01	1.23E+02	0.00E+00
TEEN:	1.62E+02	2.72E+04	0.00E+00	0.00E+00	3.55E+01	9.01E+01	2.31E+02	0.00E+00
CHILD:	3.31E+02	1.75E+04	0.00E+00	0.00E+00	5.02E+01	1.84E+02	3.35E+02	0.00E+00
INFANT:	5.24E+02	1.53E+04	0.00E+00	0.00E+00	7.47E+01	3.42E+02	6.65E+02	0.00E+00

FOR PATHWAY: INHALATION

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	3.17E+00	1.05E+02	0.00E+00	0.00E+00	7.23E-01	1.89E+00	4.56E+02	0.00E+00
TEEN:	4.29E+00	9.51E+01	0.00E+00	0.00E+00	9.74E-01	2.38E+00	6.64E+02	0.00E+00
CHILD:	4.89E+00	3.44E+01	0.00E+00	0.00E+00	7.71E-01	2.71E+00	5.38E+02	0.00E+00
INFANT:	2.84E+00	1.13E+01	0.00E+00	0.00E+00	4.19E-01	1.82E+00	4.07E+02	0.00E+00

Table B4-7 Continued
INDIVIDUAL DOSE FACTORS FOR GASEOUS EFFLUENTS -- FOR ISOTOPE : MN54

FOR PATHWAY: PLUME

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: GROUND

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	4.23E+07	4.23E+07	4.23E+07	4.23E+07	4.23E+07	4.23E+07	4.23E+07	4.96E+07
TEEN:	4.23E+07	4.23E+07	4.23E+07	4.23E+07	4.23E+07	4.23E+07	4.23E+07	4.96E+07
CHILD:	4.23E+07	4.23E+07	4.23E+07	4.23E+07	4.23E+07	4.23E+07	4.23E+07	4.96E+07
INFANT:	4.23E+07	4.23E+07	4.23E+07	4.23E+07	4.23E+07	4.23E+07	4.23E+07	4.96E+07

FOR PATHWAY: VEGETABLE

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	1.77E+06	2.84E+07	0.00E+00	9.27E+06	2.76E+06	0.00E+00	0.00E+00	0.00E+00
TEEN:	2.67E+06	2.76E+07	0.00E+00	1.35E+07	4.01E+06	0.00E+00	0.00E+00	0.00E+00
CHILD:	5.24E+06	1.65E+07	0.00E+00	1.97E+07	5.52E+06	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: MEAT

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	4.23E+04	6.79E+05	0.00E+00	2.22E+05	6.60E+04	0.00E+00	0.00E+00	0.00E+00
TEEN:	3.35E+04	3.47E+05	0.00E+00	1.69E+05	5.04E+04	0.00E+00	0.00E+00	0.00E+00
CHILD:	5.15E+04	1.62E+05	0.00E+00	1.93E+05	5.42E+04	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: COW MILK

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	3.88E+04	6.22E+05	0.00E+00	2.03E+05	6.05E+04	0.00E+00	0.00E+00	0.00E+00
TEEN:	6.71E+04	6.94E+05	0.00E+00	3.38E+05	1.01E+05	0.00E+00	0.00E+00	0.00E+00
CHILD:	1.35E+05	4.25E+05	0.00E+00	5.06E+05	1.42E+05	0.00E+00	0.00E+00	0.00E+00
INFANT:	2.13E+05	3.46E+05	0.00E+00	9.47E+05	2.09E+05	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: GOAT MILK

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	4.65E+03	7.47E+04	0.00E+00	2.44E+04	7.25E+03	0.00E+00	0.00E+00	0.00E+00
TEEN:	8.05E+03	8.33E+04	0.00E+00	4.06E+04	1.21E+04	0.00E+00	0.00E+00	0.00E+00
CHILD:	1.62E+04	5.10E+04	0.00E+00	6.08E+04	1.70E+04	0.00E+00	0.00E+00	0.00E+00
INFANT:	2.56E+04	4.15E+04	0.00E+00	1.13E+05	2.50E+04	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: INHALATION

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	2.00E+02	2.45E+03	0.00E+00	1.26E+03	3.12E+02	0.00E+00	4.44E+04	0.00E+00
TEEN:	2.66E+02	2.12E+03	0.00E+00	1.62E+03	4.03E+02	0.00E+00	6.29E+04	0.00E+00
CHILD:	3.01E+02	7.26E+02	0.00E+00	1.36E+03	3.18E+02	0.00E+00	5.00E+04	0.00E+00
INFANT:	1.58E+02	2.24E+02	0.00E+00	8.03E+02	1.58E+02	0.00E+00	3.17E+04	0.00E+00

Table B4-7 Continued
INDIVIDUAL DOSE FACTORS FOR GASEOUS EFFLUENTS -- FOR ISOTOPE : FE59

FOR PATHWAY: PLUME

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: GROUND

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	8.34E+06	8.34E+06	8.34E+06	8.34E+06	8.34E+06	8.34E+06	8.34E+06	9.80E+06
TEEN:	8.34E+06	8.34E+06	8.34E+06	8.34E+06	8.34E+06	8.34E+06	8.34E+06	9.80E+06
CHILD:	8.34E+06	8.34E+06	8.34E+06	8.34E+06	8.34E+06	8.34E+06	8.34E+06	9.80E+06
INFANT:	8.34E+06	8.34E+06	8.34E+06	8.34E+06	8.34E+06	8.34E+06	8.34E+06	9.80E+06

FOR PATHWAY: VEGETABLE

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	3.36E+06	2.92E+07	3.73E+06	8.76E+06	0.00E+00	0.00E+00	2.45E+06	0.00E+00
TEEN:	4.78E+06	2.93E+07	5.30E+06	1.24E+07	0.00E+00	0.00E+00	3.90E+06	0.00E+00
CHILD:	9.47E+06	1.98E+07	1.17E+07	1.90E+07	0.00E+00	0.00E+00	5.51E+06	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: MEAT

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	4.22E+06	5.41E+07	6.90E+06	1.62E+07	0.00E+00	0.00E+00	4.53E+06	0.00E+00
TEEN:	4.97E+06	3.04E+07	5.51E+06	1.29E+07	0.00E+00	0.00E+00	4.06E+06	0.00E+00
CHILD:	7.88E+06	1.65E+07	9.78E+06	1.58E+07	0.00E+00	0.00E+00	4.59E+06	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: COW MILK

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	6.95E+05	6.04E+06	7.71E+05	1.81E+06	0.00E+00	0.00E+00	5.07E+05	0.00E+00
TEEN:	1.21E+06	7.43E+06	1.35E+06	3.14E+06	0.00E+00	0.00E+00	9.91E+05	0.00E+00
CHILD:	2.52E+06	5.26E+06	3.12E+06	5.05E+06	0.00E+00	0.00E+00	1.46E+06	0.00E+00
INFANT:	4.01E+06	4.86E+06	5.83E+06	1.02E+07	0.00E+00	0.00E+00	3.01E+06	0.00E+00

FOR PATHWAY: GOAT MILK

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	9.04E+03	7.86E+04	1.00E+04	2.36E+04	0.00E+00	0.00E+00	6.59E+03	0.00E+00
TEEN:	1.58E+04	9.66E+04	1.75E+04	4.09E+04	0.00E+00	0.00E+00	1.29E+04	0.00E+00
CHILD:	3.27E+04	6.84E+04	4.06E+04	6.57E+04	0.00E+00	0.00E+00	1.90E+04	0.00E+00
INFANT:	5.22E+04	6.32E+04	7.58E+04	1.32E+05	0.00E+00	0.00E+00	3.91E+04	0.00E+00

FOR PATHWAY: INHALATION

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	3.35E+02	5.96E+03	3.73E+02	8.80E+02	0.00E+00	0.00E+00	3.22E+04	0.00E+00
TEEN:	4.54E+02	5.66E+03	5.05E+02	1.17E+03	0.00E+00	0.00E+00	4.84E+04	0.00E+00
CHILD:	5.29E+02	2.24E+03	6.56E+02	1.06E+03	0.00E+00	0.00E+00	4.02E+04	0.00E+00
INFANT:	3.00E+02	7.86E+02	4.30E+02	7.46E+02	0.00E+00	0.00E+00	3.22E+04	0.00E+00

Table B4-7 Continued
INDIVIDUAL DOSE FACTORS FOR GASEOUS EFFLUENTS -- FOR ISOTOPE : CO58

FOR PATHWAY: PLUME

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: GROUND

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	1.16E+07	1.16E+07	1.16E+07	1.16E+07	1.16E+07	1.16E+07	1.16E+07	1.36E+07
TEEN:	1.16E+07	1.16E+07	1.16E+07	1.16E+07	1.16E+07	1.16E+07	1.16E+07	1.36E+07
CHILD:	1.16E+07	1.16E+07	1.16E+07	1.16E+07	1.16E+07	1.16E+07	1.16E+07	1.36E+07
INFANT:	1.16E+07	1.16E+07	1.16E+07	1.16E+07	1.16E+07	1.16E+07	1.16E+07	1.36E+07

FOR PATHWAY: VEGETABLE

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	2.02E+06	1.83E+07	0.00E+00	9.02E+05	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	2.95E+06	1.76E+07	0.00E+00	1.28E+06	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	5.78E+06	1.10E+07	0.00E+00	1.89E+06	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: MEAT

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	1.03E+06	9.30E+06	0.00E+00	4.59E+05	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	8.16E+05	4.88E+06	0.00E+00	3.54E+05	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	1.77E+06	2.41E+06	0.00E+00	4.13E+05	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: COW MILK

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	2.66E+05	2.41E+06	0.00E+00	1.19E+05	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	4.61E+05	2.75E+06	0.00E+00	2.00E+05	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	9.35E+05	1.78E+06	0.00E+00	3.05E+05	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	1.52E+06	1.52E+06	0.00E+00	6.11E+05	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: GOAT MILK

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	3.19E+04	2.89E+05	0.00E+00	1.42E+04	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	5.53E+04	3.31E+05	0.00E+00	2.40E+04	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	1.12E+05	2.14E+05	0.00E+00	3.66E+04	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	1.82E+05	1.83E+05	0.00E+00	7.33E+04	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: INHALATION

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	6.57E+01	3.37E+03	0.00E+00	5.02E+01	0.00E+00	0.00E+00	2.94E+04	0.00E+00
TEEN:	8.80E+01	3.02E+03	0.00E+00	6.57E+01	0.00E+00	0.00E+00	4.26E+04	0.00E+00
CHILD:	1.00E+02	1.09E+03	0.00E+00	5.62E+01	0.00E+00	0.00E+00	3.51E+04	0.00E+00
INFANT:	5.77E+01	3.53E+02	0.00E+00	3.87E+01	0.00E+00	0.00E+00	2.46E+04	0.00E+00

Table B4-7 Continued
INDIVIDUAL DOSE FACTORS FOR GASEOUS EFFLUENTS -- FOR ISOTOPE : CO60

FOR PATHWAY: PLUME

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: GROUND

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	6.58E+08	6.58E+08	6.58E+08	6.58E+08	6.58E+08	6.58E+08	6.58E+08	7.74E+08
TEEN:	6.58E+08	6.58E+08	6.58E+08	6.58E+08	6.58E+08	6.58E+08	6.58E+08	7.74E+08
CHILD:	6.58E+08	6.58E+08	6.58E+08	6.58E+08	6.58E+08	6.58E+08	6.58E+08	7.74E+08
INFANT:	6.58E+08	6.58E+08	6.58E+08	6.58E+08	6.58E+08	6.58E+08	6.58E+08	7.74E+08

FOR PATHWAY: VEGETABLE

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	1.11E+07	9.42E+07	0.00E+00	5.02E+06	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	1.68E+07	9.72E+07	0.00E+00	7.46E+06	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	3.35E+07	6.29E+07	0.00E+00	1.14E+07	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: MEAT

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	3.98E+06	3.39E+07	0.00E+00	1.80E+06	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	3.15E+06	1.82E+07	0.00E+00	1.40E+06	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	4.90E+06	9.20E+06	0.00E+00	1.66E+06	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: COW MILK

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	8.68E+05	7.39E+06	0.00E+00	3.93E+05	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	1.50E+06	8.68E+06	0.00E+00	6.66E+05	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	3.05E+06	5.73E+06	0.00E+00	1.03E+06	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	4.99E+06	5.03E+06	0.00E+00	2.11E+06	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: GOAT MILK

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	1.04E+05	8.87E+05	0.00E+00	4.72E+04	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	1.80E+05	1.04E+06	0.00E+00	8.00E+04	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	3.66E+05	6.88E+05	0.00E+00	1.24E+05	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	5.99E+05	6.03E+05	0.00E+00	2.54E+05	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: INHALATION

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	4.69E+02	9.03E+03	0.00E+00	3.65E+02	0.00E+00	0.00E+00	1.89E+05	0.00E+00
TEEN:	6.29E+02	8.22E+03	0.00E+00	4.79E+02	0.00E+00	0.00E+00	2.76E+05	0.00E+00
CHILD:	7.18E+02	3.05E+03	0.00E+00	4.16E+02	0.00E+00	0.00E+00	2.24E+05	0.00E+00
INFANT:	3.73E+02	1.01E+03	0.00E+00	2.54E+02	0.00E+00	0.00E+00	1.43E+05	0.00E+00

Table B4-7 Continued
INDIVIDUAL DOSE FACTORS FOR GASEOUS EFFLUENTS -- FOR ISOTOPE : ZN65

FOR PATHWAY: PLUME

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: GROUND

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	2.29E+07	2.29E+07	2.29E+07	2.29E+07	2.29E+07	2.29E+07	2.29E+07	2.63E+07
TEEN:	2.29E+07	2.29E+07	2.29E+07	2.29E+07	2.29E+07	2.29E+07	2.29E+07	2.63E+07
CHILD:	2.29E+07	2.29E+07	2.29E+07	2.29E+07	2.29E+07	2.29E+07	2.29E+07	2.63E+07
INFANT:	2.29E+07	2.29E+07	2.29E+07	2.29E+07	2.29E+07	2.29E+07	2.29E+07	2.63E+07

FOR PATHWAY: VEGETABLE

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	1.74E+07	2.43E+07	1.21E+07	3.86E+07	2.58E+07	0.00E+00	0.00E+00	0.00E+00
TEEN:	2.62E+07	2.38E+07	1.62E+07	5.63E+07	3.60E+07	0.00E+00	0.00E+00	0.00E+00
CHILD:	5.15E+07	1.45E+07	3.11E+07	8.28E+07	5.22E+07	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: MEAT

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	1.39E+07	1.94E+07	9.70E+06	3.09E+07	2.06E+07	0.00E+00	0.00E+00	0.00E+00
TEEN:	1.10E+07	1.00E+07	6.82E+06	2.37E+07	1.52E+07	0.00E+00	0.00E+00	0.00E+00
CHILD:	1.70E+07	4.79E+06	1.02E+07	2.73E+07	1.72E+07	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: COW MILK

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	5.38E+07	7.49E+07	3.74E+07	1.19E+08	7.96E+07	0.00E+00	0.00E+00	0.00E+00
TEEN:	9.30E+07	8.44E+07	5.74E+07	1.99E+08	1.29E+08	0.00E+00	0.00E+00	0.00E+00
CHILD:	1.87E+08	5.27E+07	1.13E+08	3.00E+08	1.89E+08	0.00E+00	0.00E+00	0.00E+00
INFANT:	2.39E+08	4.38E+08	1.51E+08	5.19E+08	2.52E+08	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: GOAT MILK

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	6.45E+06	8.99E+06	4.49E+06	1.43E+07	9.55E+06	0.00E+00	0.00E+00	0.00E+00
TEEN:	1.12E+07	1.01E+07	6.89E+06	2.39E+07	1.53E+07	0.00E+00	0.00E+00	0.00E+00
CHILD:	2.24E+07	6.33E+06	1.35E+07	3.60E+07	2.27E+07	0.00E+00	0.00E+00	0.00E+00
INFANT:	2.87E+07	5.26E+07	1.82E+07	6.23E+07	3.02E+07	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: INHALATION

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	1.48E+03	1.69E+03	1.03E+03	3.27E+03	2.19E+03	0.00E+00	2.74E+04	0.00E+00
TEEN:	1.98E+03	1.48E+03	1.22E+03	4.24E+03	2.74E+03	0.00E+00	3.93E+04	0.00E+00
CHILD:	2.23E+03	5.17E+02	1.35E+03	3.59E+03	2.26E+03	0.00E+00	3.16E+04	0.00E+00
INFANT:	9.85E+02	1.63E+03	6.12E+02	1.98E+03	1.03E+03	0.00E+00	2.05E+04	0.00E+00

Table B4-7 Continued

INDIVIDUAL DOSE FACTORS FOR GASEOUS EFFLUENTS -- FOR ISOTOPE : SR89

FOR PATHWAY: PLUME

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: GROUND

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	6.62E+02	6.62E+02	6.62E+02	6.62E+02	6.62E+02	6.62E+02	6.62E+02	7.68E+02
TEEN:	6.62E+02	6.62E+02	6.62E+02	6.62E+02	6.62E+02	6.62E+02	6.62E+02	7.68E+02
CHILD:	6.62E+02	6.62E+02	6.62E+02	6.62E+02	6.62E+02	6.62E+02	6.62E+02	7.68E+02
INFANT:	6.62E+02	6.62E+02	6.62E+02	6.62E+02	6.62E+02	6.62E+02	6.62E+02	7.68E+02

FOR PATHWAY: VEGETABLE

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	8.77E+06	4.90E+07	3.06E+08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	1.33E+07	5.53E+07	4.64E+08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	3.15E+07	4.27E+07	1.10E+09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: MEAT

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	2.41E+05	1.34E+06	8.38E+06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	2.03E+05	8.43E+05	7.08E+06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	3.82E+05	5.18E+05	1.34E+07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: COW MILK

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	1.16E+06	6.47E+06	4.03E+07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	2.13E+06	8.85E+06	7.43E+07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	5.25E+06	7.12E+06	1.84E+08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	1.00E+07	7.19E+06	3.50E+08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: GOAT MILK

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	2.43E+06	1.36E+07	8.47E+07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	4.47E+06	1.86E+07	1.56E+08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	1.10E+07	1.50E+07	3.86E+08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	2.11E+07	1.51E+07	7.34E+08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: INHALATION

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	2.76E+02	1.11E+04	9.64E+03	0.00E+00	0.00E+00	0.00E+00	4.44E+04	0.00E+00
TEEN:	3.96E+02	1.18E+04	1.38E+04	0.00E+00	0.00E+00	0.00E+00	7.66E+04	0.00E+00
CHILD:	5.47E+02	5.30E+03	1.90E+04	0.00E+00	0.00E+00	0.00E+00	6.84E+04	0.00E+00
INFANT:	3.62E+02	2.03E+03	1.26E+04	0.00E+00	0.00E+00	0.00E+00	6.44E+04	0.00E+00

Table B4-7 Continued
INDIVIDUAL DOSE FACTORS FOR GASEOUS EFFLUENTS -- FOR ISOTOPE : SR90

FOR PATHWAY: PLUME

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: GROUND

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: VEGETABLE

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	1.28E+10	1.51E+09	5.23E+10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	1.60E+10	1.82E+09	6.49E+10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	2.73E+10	1.45E+09	1.08E+11	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: MEAT

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	3.81E+08	4.48E+07	1.55E+09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	2.48E+08	2.82E+07	1.00E+09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	3.29E+08	1.75E+07	1.30E+09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: COW MILK

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	1.43E+09	1.69E+08	5.64E+09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	2.04E+09	2.32E+08	8.25E+09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	3.53E+09	1.88E+08	1.39E+10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	3.86E+09	1.89E+08	1.52E+10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: GOAT MILK

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	3.01E+09	3.54E+08	1.23E+10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	4.28E+09	4.86E+08	1.73E+10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	7.42E+09	3.94E+08	2.93E+10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	8.11E+09	3.98E+08	3.19E+10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: INHALATION

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	1.93E+05	2.29E+04	3.14E+06	0.00E+00	0.00E+00	0.00E+00	3.04E+05	0.00E+00
TEEN:	2.12E+05	2.42E+04	3.42E+06	0.00E+00	0.00E+00	0.00E+00	5.22E+05	0.00E+00
CHILD:	2.04E+05	1.09E+04	3.20E+06	0.00E+00	0.00E+00	0.00E+00	4.68E+05	0.00E+00
INFANT:	8.21E+04	4.15E+03	1.30E+06	0.00E+00	0.00E+00	0.00E+00	3.56E+05	0.00E+00

Table B4-7 Continued

INDIVIDUAL DOSE FACTORS FOR GASEOUS EFFLUENTS -- FOR ISOTOPE : ZR95

FOR PATHWAY: PLUME

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: GROUND

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	7.48E+06	7.48E+06	7.48E+06	7.48E+06	7.48E+06	7.48E+06	7.48E+06	8.67E+06
TEEN:	7.48E+06	7.48E+06	7.48E+06	7.48E+06	7.48E+06	7.48E+06	7.48E+06	8.67E+06
CHILD:	7.48E+06	7.48E+06	7.48E+06	7.48E+06	7.48E+06	7.48E+06	7.48E+06	8.67E+06
INFANT:	7.48E+06	7.48E+06	7.48E+06	7.48E+06	7.48E+06	7.48E+06	7.48E+06	8.67E+06

FOR PATHWAY: VEGETABLE

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	7.48E+03	3.50E+07	3.45E+04	1.11E+04	1.73E+04	0.00E+00	0.00E+00	0.00E+00
TEEN:	1.10E+04	3.68E+07	5.05E+04	1.59E+04	2.34E+04	0.00E+00	0.00E+00	0.00E+00
CHILD:	2.21E+04	2.60E+07	1.13E+05	2.49E+04	3.56E+04	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: MEAT

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	1.03E+04	4.82E+07	4.74E+04	1.52E+04	2.39E+04	0.00E+00	0.00E+00	0.00E+00
TEEN:	8.24E+03	2.77E+07	3.80E+04	1.20E+04	1.76E+04	0.00E+00	0.00E+00	0.00E+00
CHILD:	1.32E+04	1.55E+07	6.74E+04	1.48E+04	2.12E+04	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: COW MILK

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	5.18E+00	2.43E+04	2.39E+01	7.66E+00	1.20E+01	0.00E+00	0.00E+00	0.00E+00
TEEN:	9.06E+00	3.04E+04	4.18E+01	1.32E+01	1.94E+01	0.00E+00	0.00E+00	0.00E+00
CHILD:	1.90E+01	2.22E+04	9.70E+01	2.13E+01	3.05E+01	0.00E+00	0.00E+00	0.00E+00
INFANT:	2.99E+01	2.09E+04	1.72E+02	4.20E+01	4.52E+01	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: GOAT MILK

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	6.22E-01	2.91E+03	2.87E+00	9.19E-01	1.44E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	1.09E+00	3.65E+03	5.01E+00	1.58E+00	2.32E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	2.28E+00	2.67E+03	1.16E+01	2.56E+00	3.66E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	3.57E+00	2.51E+03	2.07E+01	5.04E+00	5.43E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: INHALATION

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	7.38E+02	4.77E+03	3.40E+03	1.09E+03	1.72E+03	0.00E+00	5.60E+04	0.00E+00
TEEN:	9.99E+02	4.72E+03	4.62E+03	1.45E+03	2.14E+03	0.00E+00	8.52E+04	0.00E+00
CHILD:	1.17E+03	1.94E+03	6.02E+03	1.33E+03	1.89E+03	0.00E+00	7.07E+04	0.00E+00
INFANT:	6.44E+02	6.38E+02	3.66E+03	8.83E+02	9.85E+02	0.00E+00	5.55E+04	0.00E+00

Table B4-7 Continued
INDIVIDUAL DOSE FACTORS FOR GASEOUS EFFLUENTS -- FOR ISOTOPE : SB124

FOR PATHWAY: PLUME

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: GROUND

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: VEGETABLE

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: MEAT

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: COW MILK

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: GOAT MILK

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: INHALATION

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table B4-7 Continued
INDIVIDUAL DOSE FACTORS FOR GASEOUS EFFLUENTS -- FOR ISOTOPE : CS134

FOR PATHWAY: PLUME

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: GROUND

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	2.09E+08	2.09E+08	2.09E+08	2.09E+08	2.09E+08	2.09E+08	2.09E+08	2.44E+08
TEEN:	2.09E+08	2.09E+08	2.09E+08	2.09E+08	2.09E+08	2.09E+08	2.09E+08	2.44E+08
CHILD:	2.09E+08	2.09E+08	2.09E+08	2.09E+08	2.09E+08	2.09E+08	2.09E+08	2.44E+08
INFANT:	2.09E+08	2.09E+08	2.09E+08	2.09E+08	2.09E+08	2.09E+08	2.09E+08	2.44E+08

FOR PATHWAY: VEGETABLE

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	2.73E+08	5.83E+06	1.40E+08	3.33E+08	1.08E+08	0.00E+00	3.58E+07	0.00E+00
TEEN:	2.33E+08	6.24E+06	2.13E+08	5.02E+08	1.59E+08	0.00E+00	6.09E+07	0.00E+00
CHILD:	1.67E+08	4.26E+06	4.81E+08	7.90E+08	2.45E+08	0.00E+00	8.79E+07	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: MEAT

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	3.08E+07	6.59E+05	1.58E+07	3.77E+07	1.22E+07	0.00E+00	4.05E+06	0.00E+00
TEEN:	1.37E+07	3.68E+05	1.26E+07	2.96E+07	9.41E+06	0.00E+00	3.59E+06	0.00E+00
CHILD:	7.68E+06	1.96E+05	2.22E+07	3.64E+07	1.13E+07	0.00E+00	4.05E+06	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: COW MILK

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	2.65E+08	5.67E+06	1.36E+08	3.24E+08	1.05E+08	0.00E+00	3.48E+07	0.00E+00
TEEN:	2.58E+08	6.92E+06	2.36E+08	5.56E+08	1.77E+08	0.00E+00	6.75E+07	0.00E+00
CHILD:	1.89E+08	4.82E+06	5.45E+08	8.94E+08	2.77E+08	0.00E+00	9.94E+07	0.00E+00
INFANT:	1.65E+08	4.45E+06	8.78E+08	1.64E+09	4.21E+08	0.00E+00	1.73E+08	0.00E+00

FOR PATHWAY: GOAT MILK

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	7.94E+08	1.70E+07	4.08E+08	9.71E+08	3.14E+08	0.00E+00	1.04E+08	0.00E+00
TEEN:	7.74E+08	2.07E+07	7.09E+08	1.67E+09	5.30E+08	0.00E+00	2.02E+08	0.00E+00
CHILD:	5.66E+08	1.45E+07	1.63E+09	2.68E+09	8.31E+08	0.00E+00	2.98E+08	0.00E+00
INFANT:	4.96E+08	1.33E+07	2.63E+09	4.91E+09	1.26E+09	0.00E+00	5.18E+08	0.00E+00

FOR PATHWAY: INHALATION

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	2.31E+04	3.30E+02	1.18E+04	2.69E+04	9.10E+03	0.00E+00	3.09E+03	0.00E+00
TEEN:	1.74E+04	3.09E+02	1.59E+04	3.58E+04	1.19E+04	0.00E+00	4.64E+03	0.00E+00
CHILD:	7.12E+03	1.22E+02	2.06E+04	3.21E+04	1.05E+04	0.00E+00	3.84E+03	0.00E+00
INFANT:	2.36E+03	4.23E+01	1.26E+04	2.23E+04	6.04E+03	0.00E+00	2.53E+03	0.00E+00

Table B4-7 Continued
INDIVIDUAL DOSE FACTORS FOR GASEOUS EFFLUENTS -- FOR ISOTOPE : CS136

FOR PATHWAY: PLUME

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: GROUND

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	4.60E+06	4.60E+06	4.60E+06	4.60E+06	4.60E+06	4.60E+06	4.60E+06	5.21E+06
TEEN:	4.60E+06	4.60E+06	4.60E+06	4.60E+06	4.60E+06	4.60E+06	4.60E+06	5.21E+06
CHILD:	4.60E+06	4.60E+06	4.60E+06	4.60E+06	4.60E+06	4.60E+06	4.60E+06	5.21E+06
INFANT:	4.60E+06	4.60E+06	4.60E+06	4.60E+06	4.60E+06	4.60E+06	4.60E+06	5.21E+06

FOR PATHWAY: VEGETABLE

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	3.66E+06	5.77E+05	1.29E+06	5.08E+06	2.83E+06	0.00E+00	3.83E+05	0.00E+00
TEEN:	3.48E+06	4.17E+05	1.32E+06	5.19E+06	2.82E+06	0.00E+00	4.45E+05	0.00E+00
CHILD:	4.41E+06	2.40E+05	2.48E+06	6.82E+06	3.63E+06	0.00E+00	5.42E+05	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: MEAT

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	9.89E+05	1.56E+05	3.48E+05	1.37E+06	7.64E+05	0.00E+00	1.05E+05	0.00E+00
TEEN:	7.17E+05	8.59E+04	2.71E+05	1.07E+06	5.81E+05	0.00E+00	9.16E+04	0.00E+00
CHILD:	8.33E+05	4.52E+04	4.68E+05	1.29E+06	6.85E+05	0.00E+00	1.02E+05	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: COW MILK

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	2.16E+07	3.41E+06	7.61E+06	3.00E+07	1.67E+07	0.00E+00	2.29E+06	0.00E+00
TEEN:	3.42E+07	4.10E+06	1.30E+07	5.10E+07	2.77E+07	0.00E+00	4.37E+06	0.00E+00
CHILD:	5.20E+07	2.82E+06	2.92E+07	8.04E+07	4.28E+07	0.00E+00	6.38E+06	0.00E+00
INFANT:	6.27E+07	2.55E+06	5.71E+07	1.68E+08	6.69E+07	0.00E+00	1.37E+07	0.00E+00

FOR PATHWAY: GOAT MILK

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	6.49E+07	1.02E+07	2.28E+07	9.01E+07	5.01E+07	0.00E+00	6.87E+06	0.00E+00
TEEN:	1.03E+08	1.23E+07	3.89E+07	1.53E+08	8.32E+07	0.00E+00	1.31E+07	0.00E+00
CHILD:	1.56E+08	8.47E+06	8.77E+07	2.41E+08	1.28E+08	0.00E+00	1.91E+07	0.00E+00
INFANT:	1.88E+08	7.65E+06	1.71E+08	5.04E+08	2.01E+08	0.00E+00	4.11E+07	0.00E+00

FOR PATHWAY: INHALATION

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	3.50E+03	3.70E+02	1.24E+03	4.64E+03	2.71E+03	0.00E+00	3.80E+02	0.00E+00
TEEN:	4.34E+03	3.45E+02	1.63E+03	6.14E+03	3.50E+03	0.00E+00	5.63E+02	0.00E+00
CHILD:	3.68E+03	1.33E+02	2.06E+03	5.42E+03	3.03E+03	0.00E+00	4.61E+02	0.00E+00
INFANT:	1.68E+03	4.53E+01	1.53E+03	4.26E+03	1.79E+03	0.00E+00	3.73E+02	0.00E+00

Table B4-7 Continued
INDIVIDUAL DOSE FACTORS FOR GASEOUS EFFLUENTS -- FOR ISOTOPE : CS137

FOR PATHWAY: PLUME

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: GROUND

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	3.15E+08	3.15E+08	3.15E+08	3.15E+08	3.15E+08	3.15E+08	3.15E+08	3.67E+08
TEEN:	3.15E+08	3.15E+08	3.15E+08	3.15E+08	3.15E+08	3.15E+08	3.15E+08	3.67E+08
CHILD:	3.15E+08	3.15E+08	3.15E+08	3.15E+08	3.15E+08	3.15E+08	3.15E+08	3.67E+08
INFANT:	3.15E+08	3.15E+08	3.15E+08	3.15E+08	3.15E+08	3.15E+08	3.15E+08	3.67E+08

FOR PATHWAY: VEGETABLE

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	1.96E+08	5.79E+06	2.19E+08	2.99E+08	1.02E+08	0.00E+00	3.38E+07	0.00E+00
TEEN:	1.62E+08	6.60E+06	3.49E+08	4.64E+08	1.58E+08	0.00E+00	6.13E+07	0.00E+00
CHILD:	1.16E+08	4.93E+06	8.23E+08	7.88E+08	2.57E+08	0.00E+00	9.24E+07	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: MEAT

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	1.99E+07	5.88E+05	2.22E+07	3.04E+07	1.03E+07	0.00E+00	3.43E+06	0.00E+00
TEEN:	8.54E+06	3.49E+05	1.84E+07	2.45E+07	8.35E+06	0.00E+00	3.24E+06	0.00E+00
CHILD:	4.80E+06	2.03E+05	3.39E+07	3.25E+07	1.06E+07	0.00E+00	3.81E+06	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: COW MILK

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	1.68E+08	4.97E+06	1.88E+08	2.57E+08	8.72E+07	0.00E+00	2.90E+07	0.00E+00
TEEN:	1.58E+08	6.45E+06	3.41E+08	4.53E+08	1.54E+08	0.00E+00	5.99E+07	0.00E+00
CHILD:	1.16E+08	4.92E+06	8.21E+08	7.86E+08	2.56E+08	0.00E+00	9.21E+07	0.00E+00
INFANT:	1.09E+08	4.79E+06	1.31E+09	1.53E+09	4.12E+08	0.00E+00	1.67E+08	0.00E+00

FOR PATHWAY: GOAT MILK

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	5.05E+08	1.49E+07	5.64E+08	7.71E+08	2.62E+08	0.00E+00	8.70E+07	0.00E+00
TEEN:	4.74E+08	1.93E+07	1.02E+09	1.36E+09	4.63E+08	0.00E+00	1.80E+08	0.00E+00
CHILD:	3.48E+08	1.48E+07	2.46E+09	2.36E+09	7.68E+08	0.00E+00	2.76E+08	0.00E+00
INFANT:	3.26E+08	1.44E+07	3.93E+09	4.60E+09	1.23E+09	0.00E+00	5.00E+08	0.00E+00

FOR PATHWAY: INHALATION

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	1.36E+04	2.66E+02	1.52E+04	1.97E+04	7.05E+03	0.00E+00	2.39E+03	0.00E+00
TEEN:	9.87E+03	2.69E+02	2.13E+04	2.69E+04	9.64E+03	0.00E+00	3.83E+03	0.00E+00
CHILD:	4.07E+03	1.15E+02	2.87E+04	2.62E+04	8.95E+03	0.00E+00	3.30E+03	0.00E+00
INFANT:	1.44E+03	4.23E+01	1.74E+04	1.94E+04	5.46E+03	0.00E+00	2.26E+03	0.00E+00

Table B4-7 Continued
INDIVIDUAL DOSE FACTORS FOR GASEOUS EFFLUENTS -- FOR ISOTOPE : BA140

FOR PATHWAY: PLUME

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: GROUND

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	6.27E+05	6.27E+05	6.27E+05	6.27E+05	6.27E+05	6.27E+05	6.27E+05	7.16E+05
TEEN:	6.27E+05	6.27E+05	6.27E+05	6.27E+05	6.27E+05	6.27E+05	6.27E+05	7.16E+05
CHILD:	6.27E+05	6.27E+05	6.27E+05	6.27E+05	6.27E+05	6.27E+05	6.27E+05	7.16E+05
INFANT:	6.27E+05	6.27E+05	6.27E+05	6.27E+05	6.27E+05	6.27E+05	6.27E+05	7.16E+05

FOR PATHWAY: VEGETABLE

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	2.54E+05	7.99E+06	3.88E+06	4.87E+03	1.66E+03	0.00E+00	2.79E+03	0.00E+00
TEEN:	2.69E+05	6.43E+06	4.17E+06	5.11E+03	1.73E+03	0.00E+00	3.43E+03	0.00E+00
CHILD:	4.87E+05	4.23E+06	8.35E+06	7.31E+03	2.38E+03	0.00E+00	4.36E+03	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: MEAT

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	5.46E+04	1.71E+06	8.33E+05	1.05E+03	3.56E+02	0.00E+00	5.99E+02	0.00E+00
TEEN:	4.44E+04	1.06E+06	6.38E+05	8.44E+02	2.86E+02	0.00E+00	5.67E+02	0.00E+00
CHILD:	7.42E+04	6.44E+05	1.27E+06	1.11E+03	3.62E+02	0.00E+00	6.64E+02	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: COW MILK

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	5.10E+04	1.60E+06	7.79E+05	9.78E+02	3.33E+02	0.00E+00	5.60E+02	0.00E+00
TEEN:	9.06E+04	2.17E+06	1.41E+06	1.72E+03	5.84E+02	0.00E+00	1.16E+03	0.00E+00
CHILD:	1.98E+05	1.72E+06	3.39E+06	2.97E+03	9.68E+02	0.00E+00	1.77E+03	0.00E+00
INFANT:	3.60E+05	1.72E+06	6.98E+06	6.98E+03	1.66E+03	0.00E+00	4.29E+03	0.00E+00

FOR PATHWAY: GOAT MILK

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	6.12E+03	1.92E+05	9.35E+04	1.17E+02	3.99E+01	0.00E+00	6.72E+01	0.00E+00
TEEN:	1.09E+04	2.60E+05	1.69E+05	2.07E+02	7.01E+01	0.00E+00	1.39E+02	0.00E+00
CHILD:	2.38E+04	2.06E+05	4.07E+05	3.57E+02	1.16E+02	0.00E+00	2.13E+02	0.00E+00
INFANT:	4.32E+04	2.06E+05	8.38E+05	8.38E+02	1.99E+02	0.00E+00	5.15E+02	0.00E+00

FOR PATHWAY: INHALATION

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	8.14E+01	6.92E+03	1.24E+03	1.55E+00	5.30E-01	0.00E+00	4.03E+04	0.00E+00
TEEN:	1.12E+02	7.25E+03	1.73E+03	2.13E+00	7.23E-01	0.00E+00	6.44E+04	0.00E+00
CHILD:	1.37E+02	3.23E+03	2.35E+03	2.05E+00	6.70E-01	0.00E+00	5.52E+04	0.00E+00
INFANT:	9.19E+01	1.22E+03	1.78E+03	1.78E+00	4.26E-01	0.00E+00	5.06E+04	0.00E+00

Table B4-7 Continued
INDIVIDUAL DOSE FACTORS FOR GASEOUS EFFLUENTS -- FOR ISOTOPE : CE141

FOR PATHWAY: PLUME

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: GROUND

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	4.17E+05	4.17E+05	4.17E+05	4.17E+05	4.17E+05	4.17E+05	4.17E+05	4.70E+05
TEEN:	4.17E+05	4.17E+05	4.17E+05	4.17E+05	4.17E+05	4.17E+05	4.17E+05	4.70E+05
CHILD:	4.17E+05	4.17E+05	4.17E+05	4.17E+05	4.17E+05	4.17E+05	4.17E+05	4.70E+05
INFANT:	4.17E+05	4.17E+05	4.17E+05	4.17E+05	4.17E+05	4.17E+05	4.17E+05	4.70E+05

FOR PATHWAY: VEGETABLE

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	4.50E+02	1.52E+07	5.86E+03	3.97E+03	1.84E+03	0.00E+00	0.00E+00	0.00E+00
TEEN:	6.45E+02	1.61E+07	8.41E+03	5.62E+03	2.64E+03	0.00E+00	0.00E+00	0.00E+00
CHILD:	1.44E+03	1.21E+07	1.95E+04	9.73E+03	4.27E+03	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: MEAT

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	2.87E+01	9.69E+05	3.75E+02	2.53E+02	1.18E+02	0.00E+00	0.00E+00	0.00E+00
TEEN:	2.41E+01	6.01E+05	3.15E+02	2.10E+02	9.89E+01	0.00E+00	0.00E+00	0.00E+00
CHILD:	4.39E+01	3.69E+05	5.92E+02	2.95E+02	1.30E+02	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: COW MILK

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	9.91E+00	3.34E+05	1.29E+02	8.74E+01	4.06E+01	0.00E+00	0.00E+00	0.00E+00
TEEN:	1.82E+01	4.52E+05	2.37E+02	1.58E+02	7.45E+01	0.00E+00	0.00E+00	0.00E+00
CHILD:	4.32E+01	3.63E+05	5.83E+02	2.91E+02	1.28E+02	0.00E+00	0.00E+00	0.00E+00
INFANT:	8.30E+01	3.64E+05	1.16E+03	7.05E+02	2.17E+02	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: GOAT MILK

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	1.19E+00	4.01E+04	1.55E+01	1.05E+01	4.87E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	2.18E+00	5.43E+04	2.84E+01	1.90E+01	8.93E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	5.18E+00	4.36E+04	7.00E+01	3.49E+01	1.53E+01	0.00E+00	0.00E+00	0.00E+00
INFANT:	9.96E+00	4.37E+04	1.39E+02	8.46E+01	2.61E+01	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: INHALATION

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	4.84E+01	3.80E+03	6.31E+02	4.29E+02	1.99E+02	0.00E+00	1.15E+04	0.00E+00
TEEN:	6.87E+01	4.01E+03	9.00E+02	6.01E+02	2.81E+02	0.00E+00	1.95E+04	0.00E+00
CHILD:	9.18E+01	1.79E+03	1.24E+03	6.19E+02	2.71E+02	0.00E+00	1.72E+04	0.00E+00
INFANT:	6.30E+01	6.83E+02	8.79E+02	5.26E+02	1.66E+02	0.00E+00	1.64E+04	0.00E+00

Table B4-7 Continued
INDIVIDUAL DOSE FACTORS FOR GASEOUS EFFLUENTS -- FOR ISOTOPE : CE144

FOR PATHWAY: PLUME

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: GROUND

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	2.12E+06	2.12E+06	2.12E+06	2.12E+06	2.12E+06	2.12E+06	2.12E+06	2.45E+06
TEEN:	2.12E+06	2.12E+06	2.12E+06	2.12E+06	2.12E+06	2.12E+06	2.12E+06	2.45E+06
CHILD:	2.12E+06	2.12E+06	2.12E+06	2.12E+06	2.12E+06	2.12E+06	2.12E+06	2.45E+06
INFANT:	2.12E+06	2.12E+06	2.12E+06	2.12E+06	2.12E+06	2.12E+06	2.12E+06	2.45E+06

FOR PATHWAY: VEGETABLE

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	5.09E+04	3.21E+08	9.48E+05	3.96E+05	2.35E+05	0.00E+00	0.00E+00	0.00E+00
TEEN:	8.17E+04	3.82E+08	1.52E+06	6.29E+05	3.76E+05	0.00E+00	0.00E+00	0.00E+00
CHILD:	1.95E+05	2.99E+08	3.66E+06	1.15E+06	6.36E+05	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: MEAT

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	1.87E+03	1.18E+07	3.48E+04	1.46E+04	8.64E+03	0.00E+00	0.00E+00	0.00E+00
TEEN:	1.58E+03	7.38E+06	2.94E+04	1.21E+04	7.26E+03	0.00E+00	0.00E+00	0.00E+00
CHILD:	2.95E+03	4.52E+06	5.53E+04	1.74E+04	9.61E+03	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: COW MILK

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	4.59E+02	2.89E+06	8.55E+03	3.57E+03	2.12E+03	0.00E+00	0.00E+00	0.00E+00
TEEN:	8.46E+02	3.96E+06	1.57E+04	6.51E+03	3.89E+03	0.00E+00	0.00E+00	0.00E+00
CHILD:	2.07E+03	3.17E+06	3.88E+04	1.22E+04	6.73E+03	0.00E+00	0.00E+00	0.00E+00
INFANT:	3.11E+03	3.19E+06	5.56E+04	2.28E+04	9.20E+03	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: GOAT MILK

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	5.51E+01	3.47E+05	1.03E+03	4.29E+02	2.54E+02	0.00E+00	0.00E+00	0.00E+00
TEEN:	1.01E+02	4.75E+05	1.89E+03	7.81E+02	4.67E+02	0.00E+00	0.00E+00	0.00E+00
CHILD:	2.48E+02	3.81E+05	4.66E+03	1.46E+03	8.08E+02	0.00E+00	0.00E+00	0.00E+00
INFANT:	3.74E+02	3.83E+05	6.67E+03	2.73E+03	1.10E+03	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: INHALATION

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	5.83E+03	2.59E+04	1.09E+05	4.54E+04	2.69E+04	0.00E+00	2.46E+05	0.00E+00
TEEN:	8.32E+03	2.74E+04	1.55E+05	6.42E+04	3.83E+04	0.00E+00	4.24E+05	0.00E+00
CHILD:	1.15E+04	1.23E+04	2.15E+05	6.71E+04	3.72E+04	0.00E+00	3.79E+05	0.00E+00
INFANT:	5.59E+03	4.70E+03	1.01E+05	3.84E+04	1.70E+04	0.00E+00	3.12E+05	0.00E+00

Table B4-7 Continued

INDIVIDUAL DOSE FACTORS FOR GASEOUS EFFLUENTS -- FOR ISOTOPE : I131

FOR PATHWAY: PLUME

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: GROUND

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	2.63E+05	2.63E+05	2.63E+05	2.63E+05	2.63E+05	2.63E+05	2.63E+05	3.19E+05
TEEN:	2.63E+05	2.63E+05	2.63E+05	2.63E+05	2.63E+05	2.63E+05	2.63E+05	3.19E+05
CHILD:	2.63E+05	2.63E+05	2.63E+05	2.63E+05	2.63E+05	2.63E+05	2.63E+05	3.19E+05
INFANT:	2.63E+05	2.63E+05	2.63E+05	2.63E+05	2.63E+05	2.63E+05	2.63E+05	3.19E+05

FOR PATHWAY: VEGETABLE

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	1.00E+06	4.63E+05	1.23E+06	1.75E+06	3.01E+06	5.75E+08	0.00E+00	0.00E+00
TEEN:	8.77E+05	3.23E+05	1.17E+06	1.63E+06	2.81E+06	4.77E+08	0.00E+00	0.00E+00
CHILD:	1.24E+06	1.94E+05	2.17E+06	2.18E+06	3.58E+06	7.22E+08	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: MEAT

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	1.32E+05	6.07E+04	1.61E+05	2.30E+05	3.94E+05	7.54E+07	0.00E+00	0.00E+00
TEEN:	1.01E+05	3.70E+04	1.34E+05	1.87E+05	3.22E+05	5.46E+07	0.00E+00	0.00E+00
CHILD:	1.42E+05	2.22E+04	2.48E+05	2.49E+05	4.09E+05	8.24E+07	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: COW MILK

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	3.63E+06	1.67E+06	4.42E+06	6.33E+06	1.08E+07	2.07E+09	0.00E+00	0.00E+00
TEEN:	6.04E+06	2.22E+06	8.02E+06	1.12E+07	1.93E+07	3.28E+09	0.00E+00	0.00E+00
CHILD:	1.11E+07	1.74E+06	1.95E+07	1.96E+07	3.21E+07	6.47E+09	0.00E+00	0.00E+00
INFANT:	2.10E+07	1.71E+06	4.06E+07	4.79E+07	5.59E+07	1.57E+10	0.00E+00	0.00E+00

FOR PATHWAY: GOAT MILK

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	4.35E+06	2.00E+06	5.31E+06	7.59E+06	1.30E+07	2.49E+09	0.00E+00	0.00E+00
TEEN:	7.24E+06	2.67E+06	9.63E+06	1.35E+07	2.32E+07	3.93E+09	0.00E+00	0.00E+00
CHILD:	1.33E+07	2.09E+06	2.34E+07	2.35E+07	3.86E+07	7.77E+09	0.00E+00	0.00E+00
INFANT:	2.53E+07	2.05E+06	4.88E+07	5.74E+07	6.71E+07	1.89E+10	0.00E+00	0.00E+00

FOR PATHWAY: INHALATION

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	6.49E+02	1.99E+02	7.99E+02	1.13E+03	1.94E+03	3.78E+05	0.00E+00	0.00E+00
TEEN:	8.37E+02	2.06E+02	1.12E+03	1.56E+03	2.66E+03	4.64E+05	0.00E+00	0.00E+00
CHILD:	8.64E+02	9.01E+01	1.52E+03	1.52E+03	2.50E+03	5.15E+05	0.00E+00	0.00E+00
INFANT:	6.21E+02	3.36E+01	1.20E+03	1.41E+03	1.64E+03	4.70E+05	0.00E+00	0.00E+00

Table B4-7 Continued

INDIVIDUAL DOSE FACTORS FOR GASEOUS EFFLUENTS -- FOR ISOTOPE : I133

FOR PATHWAY: PLUME

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TEEN:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CHILD:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: GROUND

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	3.75E+04	3.75E+04	3.75E+04	3.75E+04	3.75E+04	3.75E+04	3.75E+04	4.56E+04
TEEN:	3.75E+04	3.75E+04	3.75E+04	3.75E+04	3.75E+04	3.75E+04	3.75E+04	4.56E+04
CHILD:	3.75E+04	3.75E+04	3.75E+04	3.75E+04	3.75E+04	3.75E+04	3.75E+04	4.56E+04
INFANT:	3.75E+04	3.75E+04	3.75E+04	3.75E+04	3.75E+04	3.75E+04	3.75E+04	4.56E+04

FOR PATHWAY: VEGETABLE

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	1.68E+04	4.96E+04	3.18E+04	5.52E+04	9.64E+04	8.12E+06	0.00E+00	0.00E+00
TEEN:	1.53E+04	3.79E+04	2.95E+04	5.00E+04	8.78E+04	6.99E+06	0.00E+00	0.00E+00
CHILD:	2.52E+04	2.68E+04	5.38E+04	6.65E+04	1.11E+05	1.24E+07	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: MEAT

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	3.05E-03	8.99E-03	5.75E-03	1.00E-02	1.74E-02	1.47E+00	0.00E+00	0.00E+00
TEEN:	2.49E-03	6.17E-03	4.81E-03	8.16E-03	1.43E-02	1.14E+00	0.00E+00	0.00E+00
CHILD:	4.18E-03	4.45E-03	8.93E-03	1.10E-02	1.84E-02	2.05E+00	0.00E+00	0.00E+00
INFANT:	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

FOR PATHWAY: COW MILK

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	3.14E+04	9.27E+04	5.93E+04	1.03E+05	1.80E+05	1.52E+07	0.00E+00	0.00E+00
TEEN:	5.60E+04	1.39E+05	1.09E+05	1.84E+05	3.22E+05	2.56E+07	0.00E+00	0.00E+00
CHILD:	1.23E+05	1.31E+05	2.63E+05	3.25E+05	5.42E+05	6.04E+07	0.00E+00	0.00E+00
INFANT:	2.37E+05	1.37E+05	5.55E+05	8.09E+05	9.51E+05	1.47E+08	0.00E+00	0.00E+00

FOR PATHWAY: GOAT MILK

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	3.77E+04	1.11E+05	7.11E+04	1.24E+05	2.16E+05	1.82E+07	0.00E+00	0.00E+00
TEEN:	6.72E+04	1.67E+05	1.30E+05	2.20E+05	3.87E+05	3.08E+07	0.00E+00	0.00E+00
CHILD:	1.48E+05	1.57E+05	3.16E+05	3.90E+05	6.51E+05	7.25E+07	0.00E+00	0.00E+00
INFANT:	2.84E+05	1.64E+05	6.67E+05	9.71E+05	1.14E+06	1.77E+08	0.00E+00	0.00E+00

FOR PATHWAY: INHALATION

	T. BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT:	1.43E+02	2.81E+02	2.74E+02	4.69E+02	8.19E+02	6.32E+04	0.00E+00	0.00E+00
TEEN:	1.97E+02	3.27E+02	3.85E+02	6.49E+02	1.14E+03	9.26E+04	0.00E+00	0.00E+00
CHILD:	2.44E+02	1.74E+02	5.25E+02	6.44E+02	1.07E+03	1.22E+05	0.00E+00	0.00E+00
INFANT:	1.78E+02	6.83E+01	4.20E+02	6.08E+02	7.10E+02	1.13E+05	0.00E+00	0.00E+00

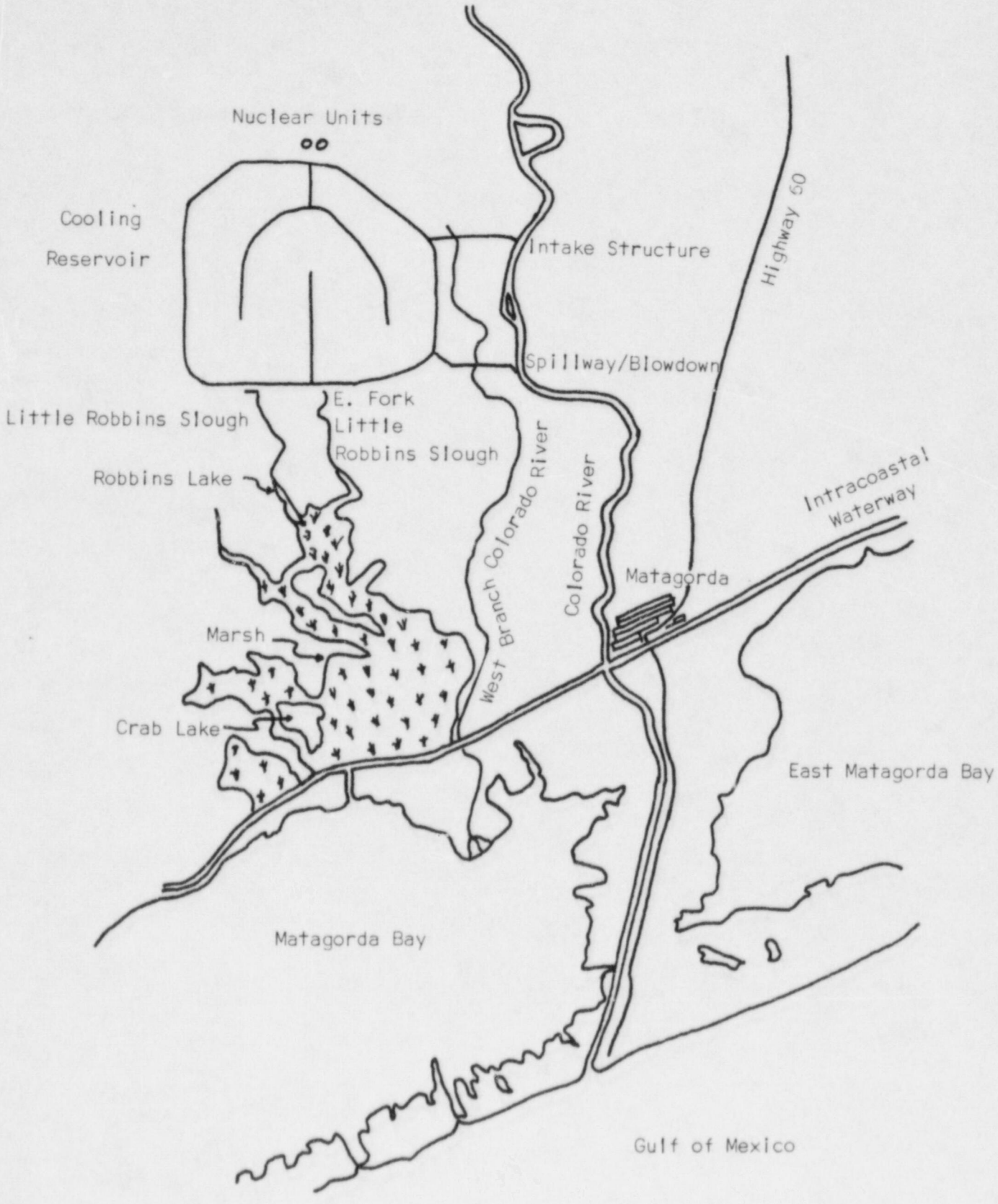


Figure B4-1 - Lower Colorado River

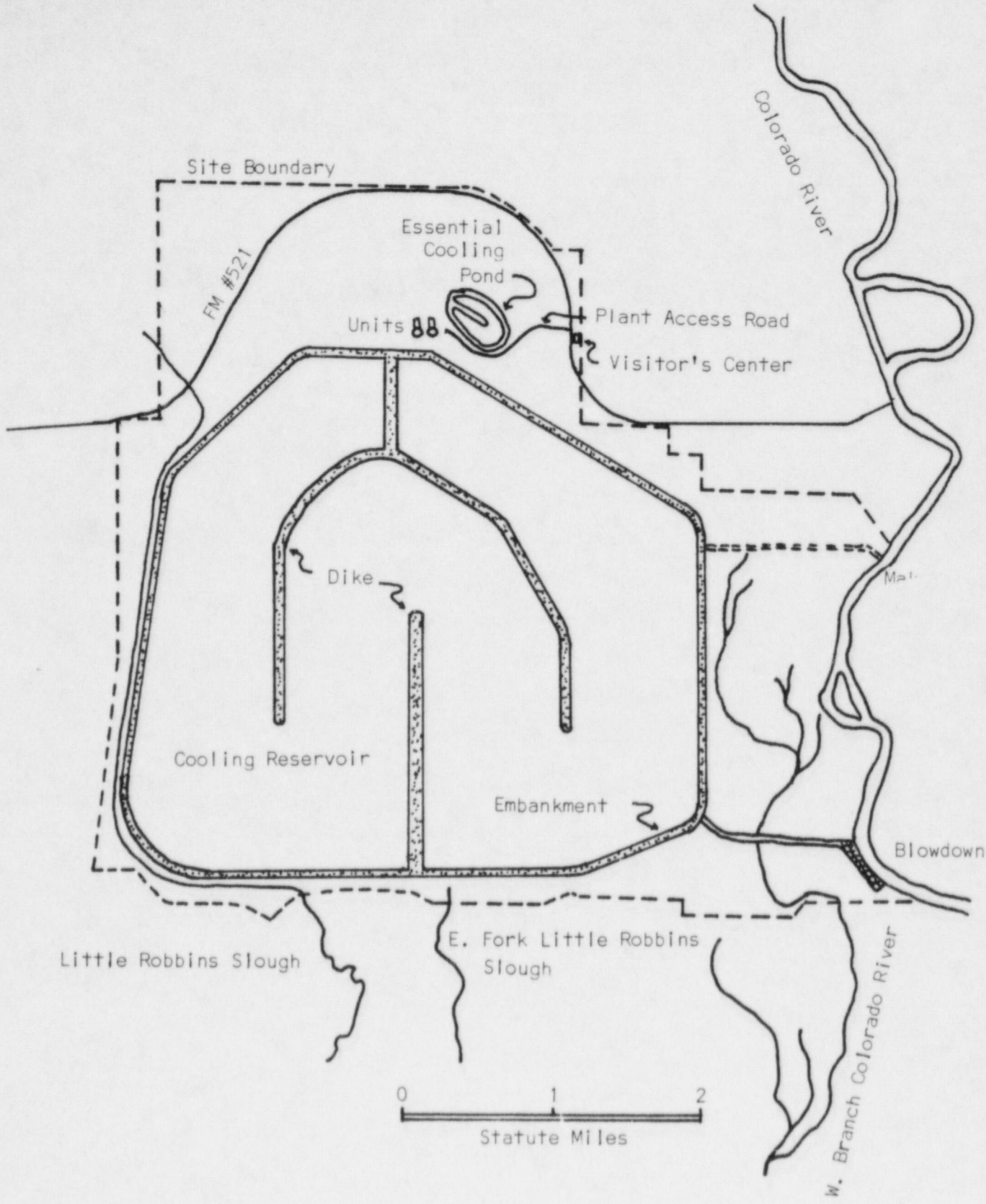


Figure B4-2 - STPEGS Site

5.0 Radiological Environmental Monitoring Program

The emphasis of the operational Radiological Environmental Monitoring Program is to verify source control at the plant. In meeting this objective, certain findings reported in the STP ER have been considered in formulating the operational Radiological Environmental Monitoring Program. Among these the most important in relation to critical exposure paths and population groups are the following:

There are no commercial dairies within ten (10) miles of the plant nor any individual cows or goats within five (5) miles whose milk is consumed by humans; however, there are six ranches with about 3600 head of beef cattle within a 10-mile radius.

There are extensive commercial crops grown, mainly rice, soybeans, grain sorghum, and cotton in the region immediately surrounding the plant. The major portion of irrigation in this region is from the canal and levee systems with water controlled by the Lower Colorado River Authority in Bay City. Alternate irrigation comes from deep water wells 300 ft. or greater in depth. Although three irrigation permits have been issued by the Lower Colorado River Authority for irrigation with Colorado River water taken downstream from the plant, these permits have not been exercised due to the brackish quality of the river in this area.

Local towns derive their drinking water from ground-water wells; there is no population consumption of water from the Colorado River below the plant.

There is substantial commercial harvesting of shellfish in Matagorda Bay, with the potential of harvesting fin fish as well depending on state controls. The Colorado River estuary is limited to sport fishing for human consumption and commercial fishing for bait species.

Prevailing winds are from the south to east-south-east.

5.1 Program Summary

The design and implementation of the Radiological Environmental Monitoring Program, related surveillance activities, sample analysis, and reporting is performed by Houston Lighting & Power Company. The monitoring program is a tiered system in which the level of surveillance is in part determined by effluent releases.

The minimum program is outlined in the following sections and in Table B5-1. The results of this program are routinely reported in the Annual Radiological Environmental Operating Report as indicated in STPEGS Technical Specification 6.9.1.3.

In support of this report, a land use census will be conducted annually.

In the event plant releases exceed an "action level" or the results of an analysis indicate unexpected concentrations of radionuclides in the environment, a more vigorous sampling program may be instituted.

In the event of an incident involving large releases of activity from STPEGS, an intensive sampling program would be initiated. This program would include special studies as appropriate for the particular incident and might include special reporting.

The following paragraphs describe the general program instituted including the types of samples, the collection frequency, and the analysis to be accomplished on each sample type.

5.2 Sampling Program Description

5.2.1 Airborne Iodine and Particulates

Airborne iodine and particulates are sampled by continuous low volume air samplers (approximately 2.5 cfm) fitted with charcoal canisters. The air sampling network will consist of 5 stations. Three stations are located at the exclusion zone boundary, one each in the N, NNW, and NW sectors. Since all releases will be at ground level or from roof vents, the highest calculated off-site ground level concentration of airborne releases occurs at the site boundary regardless of wind direction. An air sampling system is located in the community of Bay City. A control station is located at least ten (10) miles west of the site in a minimal wind direction. The filters are changed weekly and analyzed.

5.2.2 Soil Sampling

Soil samples are collected from the same locations as airborne particulates as well as from two (2) farms within five (5) miles of the site for a total of seven (7) locations. Soils are collected annually for gamma isotopic analysis.

Sediment samples shall be collected at locations influenced by plant discharge water and at a control station.

5.2.3 Ambient Radiation Measurements

Background ionizing radiation levels are measured by a network of forty (40) TLD stations. Two dosimeters are placed at each station and are collected and analyzed quarterly. The TLD stations are located adjacent to air monitoring stations and in generally concentric rings about the plant at one and five mile ranges in sixteen (16) sectors. The balance of the stations are placed in special interest areas and control locations ten to fifteen miles from the site.

5.2.4 Surface Water Sampling

Each unit discharges its liquid radioactive waste into the cooling reservoir. The radionuclides in the reservoir mix uniformly and subsequent blowdown releases to the Colorado River may contain these radionuclides. The Colorado River is sampled continuously both above and below the plant discharge structure. These composite samples are analyzed for gamma isotopes monthly and for tritium quarterly.

Radionuclides may also diffuse through the bottom of the reservoir and may be discharged to collection ditches which run into Little Robbins Slough. Quarterly grab samples are taken at three locations near the site boundary where these surface flows enter offsite surface waters.

5.2.5 Ground Water Sampling

Since seepage from the bottom of the reservoir is expected to occur, some chance exists for radionuclides to enter ground water. Two aquifers underlie the site: a shallow aquifer above about 90 feet, and a deeper one below about 300 feet. Drinking water used in the area is drawn from the aquifer below 300 feet which is separated from the shallow aquifer by an impermeable strata of clay. Hence, it is virtually impossible for plant operations to contaminate ground water in the deep aquifer from which drinking and irrigation water are drawn. Nevertheless, wells on-site are sampled and analyzed for tritium and gamma emitting nuclides.

5.2.6 Fish

Radioactivity in the liquid effluent from the plant may be available to the fish of the Colorado River and Little Robbins Slough. The Colorado River is used by sports fishermen and hence radionuclides may find their way into the human food chain. Fish samples are taken twice annually about two (2) miles down stream and several miles up stream from the plant blowdown structure. These samples are analyzed for gamma emitting nuclides.

5.2.7 Agricultural Products

The Lower Colorado River Authority which regulates the majority of irrigation water in the vicinity of STPEGS indicates that these waters originate upstream from the dam on the Colorado River near Bay City. Hence, plant liquid discharges do not affect local agriculture.

The broadleaf vegetation samples are taken semiannually. HL&P collects broadleaf vegetation samples near the site boundary in each of the three highest predicted X/Q sectors in place of sampling private garden plots. No milk is typically analyzed since no reliable sources of milk exist within five (5) miles of the plant. Gamma isotopic analysis is performed on the vegetation samples and iodine analyses will be performed if any milk samples are identified and taken.

5.2.8 Domestic Meat

At least one sample of meat is taken semiannually from farms located within ten (10) miles of the plant. The flesh is subjected to gamma isotopic analysis.

5.2.9 Game

Game is obtained on site or within ten (10) miles of the site, when available. The edible tissue is analyzed for gamma-emitting radionuclides.

5.3 Sampling Frequency

The sampling frequencies given in Table B5-1 were selected so that the results of the radiological environmental monitoring may complement the results of the radiological effluent monitoring. In some cases the sampling frequency is determined by inherent characteristics of the medium; e.g., air filters can be run only for a week before excessive pressure-drop arises.

5.4 Station Locations

Unless otherwise indicated, station locations are the same as described in Table B5-1.

5.5 Quality Control

Control checks and tests are applied to the analytical operations by means of duplicate analyses of selected samples, and by the introduction of calibrated environmental samples such as provided through the USEPA Environmental Radioactivity Laboratory Intercomparison Studies Program. Analytical procedures are similar to those reported in HASL-300 or equivalent commercial practice.

5.6 Analytical Sensitivity

The detection sensitivities of the various program elements are listed in Table B5-2. Samples are analyzed as described in the program summary.

5.7 Data Presentation

Reporting units are the same as in Table B5-2. The standard deviation of the net counting rate is computed using the gross counting rate and the background rate. Suitable statistical methods

are used to determine whether a count is significant as described in references 1 and 6.

5.8 Routine Reporting Requirements

Reports on radiological environmental monitoring sample analyses are submitted in accordance with the requirements of STPEGS Technical Specification 6.9.1.3. These reports are summaries of the results of the environmental activities and assessments of the observed impacts of plant operation on the environment.

TABLE B5-1

MINIMUM OPERATIONAL RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

EXPOSURE PATHWAY AND/OR SAMPLE MEDIA	COLLECTION			ANALYSIS	
	NOMINAL NUMBER OF SAMPLE LOCATIONS	ROUTINE SAMPLING MODE	NOMINAL COLLECTION FREQUENCY	ANALYSIS TYPE	MINIMUM ANALYSIS FREQUENCY
1. Direct Radiation TLDs	Total Stations: 40 16 stations located in sixteen sectors approximately 1 mile from containment. 16 stations located in sixteen sectors 4-6 miles from containment. 6 stations located in special interest areas (e.g. school, population center) within a 14 mile radius of containment. 2 control stations located in areas of minimal wind direction (W,ENE) 10-15 miles from containment.	Continuous	Quarterly	Gamma	Quarterly
2. AIRBORNE a. Air particulate and charcoal	Total Stations: 12 (5) 3 stations located at the exclusion zone, approximately 1 mile from containment, in the N,NNW,NW sectors. 1 station located in Bay City, 14 miles from containment. 1 control station located in a minimal wind direction (W) 11 miles from containment.	Continuous	Weekly	Radioiodine Canister: I-131 Particulate Sample: Gross Beta Gamma-Isotopic	 Weekly Weekly Quarterly composite (by location

TABLE B5-1

MINIMUM OPERATIONAL RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

EXPOSURE PATAHWAY AND/OR SAMPLE MEDIA	COLLECTION			ANALYSIS	
	NOMINAL NUMBER OF SAMPLE LOCATIONS	ROUTINE SAMPLING MODE	NOMINAL COLLECTION FREQUENCY	ANALYSIS TYPE	MINIMUM ANALYSIS FREQUENCY
b. Soils	(7) 5 same as air stations. 2 stations located on or adjacent to farms within 5 miles of containment.	Grab	Annually	Gamma-Isotopic	According to collection frequency
3. Waterborne	Total Stations: 22				
a. Surface	(7) 1 station located in reservoir at point of reservoir blowdown to Colorado River. 1 control station located above the Site on the Colorado River not influenced by plant discharge. 1 station approximately 2 miles downstream from blowdown entrance into the Colorado River (marker).	Composite	Monthly	Gamma-Isotopic Tritium	Monthly Quarterly composite
	Relief well discharge exit monitoring 1 station located near Site boundary in the Little Robbins Slough. 1 station located near Site boundary in the East Fork of Little Robbins Slough. 1 station located near Site boundary in the west branch of the Colorado River.	Grab	Quarterly	Gamma-Isotopic Tritium	Quarterly or according to collection frequency

TABLE B5-1

MINIMUM OPERATIONAL RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

EXPOSURE PATHWAY AND/OR SAMPLE MEDIA	NOMINAL NUMBER OF SAMPLE LOCATIONS	COLLECTION: ROUTINE SAMPLING MODE	COLLECTION: NOMINAL COLLECTION FREQUENCY	ANALYSIS: ANALYSIS TYPE	ANALYSIS: MINIMUM ANALYSIS FREQUENCY
	1 Station located in drainage north of reservoir that empties into the Colorado River upstream of the reservoir makeup pumping facility.				
b. Ground	(4) 1 station located at well #603A upgradient from the reservoir in the upper shallow aquifer. 1 station located at well #446A down gradient in the upper shallow aquifer. 1 station located at well #603B upgradient from the reservoir in the lower shallow aquifer. 1 station located at well #446 down gradient in the lower aquifer.	Grab	Quarterly	Gamma-Isotopic Tritium	According to collection frequency
c. Potable	(2) 1 station located on Site. 1 control station at Bay City	Grab	Monthly	Gamma-Isotopic Tritium	Monthly Quarterly Composite
d. Sediment	(9) 1 station located near Site boundary in the Little Robbins Slough.	Grab	Semiannually	Gamma-Isotopic	Semiannually

TABLE B5-1

MINIMUM OPERATIONAL RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

EXPOSURE PATHWAY AND/OR SAMPLE MEDIA	COLLECTION			ANALYSIS	
	NOMINAL NUMBER OF SAMPLE LOCATIONS	ROUTINE SAMPLING MODE	NOMINAL COLLECTION FREQUENCY	ANALYSIS TYPE	MINIMUM ANALYSIS FREQUENCY
	1 station located near Site boundary in the E. Fork Little Robbins Slough.				
	1 station located near Site boundary in the West Branch Colorado River.				
	1 control station located above the Site on the Colorado River not influenced by plant discharge.				
	1 station located approximately 2 miles downstream from blowdown entrance into the Colorado River.				
	1 station located in reservoir at point of reservoir blowdown to Colorado River.				
	1 station located in reservoir near coolant discharge.				
	1 station located at the intake structure where the run-off channel enters the Colorado River.				
	1 station located where the blowdown discharge channel intersects the Colorado River.				
4. Ingestion					
a. Milk	Total Stations: 10	Limited source of sample in vicinity at STPEGS (Attempts will be made to collect samples when available)			
		Grab	Semimonthly when on pasture, monthly at other times	Gamma-Isotopic & Low Level I-131	According to collection frequency

TABLE B5-1

MINIMUM OPERATIONAL RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

EXPOSURE PATHWAY AND/OR SAMPLE MEDIA	COLLECTION			ANALYSIS	
	NOMINAL NUMBER OF SAMPLE LOCATIONS	ROUTINE SAMPLING MODE	NOMINAL COLLECTION FREQUENCY	ANALYSIS TYPE	MINIMUM ANALYSIS FREQUENCY
b. Broadleaf (4)	3 stations located at the exclusion zone, approximately 1 mile from containment, in the N,NW,NNW sectors. 1 control station located in a minimal wind direction (W), 11 miles from containment.	Grab	Monthly during growing season	Gamma-Isotopic	Monthly according to collection frequency
c. Agricultural Products	----------	No sample stations have been identified in the vicinity of the Site. Presently no agriculatural land is irrigated by water into which liquid plant wastes will be discharged. Agricultural products will be considered if these conditions change.			----------
d. Terrestrial & Aquatic Animals (edible portion)	(3) 1 sample representing and/or recreationally important species in vicinity of STPEGS that may be influenced by plant operation. * 1 sample of same or analogous species in area not influenced by STPEGS. 1 sample of same or analogous species in the reservoir (if available).	Grab	Sample in seasons or semiannually if they are not seasonal	Gamma-Isotopic	According to collection frequency

TABLE B5-1

MINIMUM OPERATIONAL RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

EXPOSURE PATHWAY AND/OR SAMPLE MEDIA	COLLECTION			ANALYSIS	
	NOMINAL NUMBER OF SAMPLE LOCATIONS	ROUTINE SAMPLING MODE	NOMINAL COLLECTION FREQUENCY	ANALYSIS TYPE	MINIMUM ANALYSIS FREQUENCY
e. Pasture Grass	(2) 1 station located at the exclusion zone, in either of three Sectors (N, NW, & NNW). 1 control station located 11 miles W.	Grab	Quarterly (when cattle are on pasture)	Gamma-Isotopic	According to collection frequency
f. Domestic Meat	(1) 1 sample representing domestic stock fed on crops exclusively grown within 10 miles of containment.		Semiannually	Gamma-Isotopic	According to collection frequency

*Applies to aquatic samples only.

NOTE: Collection frequency may vary to accommodate sample media availability, equipment availability, and/or weather conditions.

TABLE 5.2

Detection Capabilities for Environmental Sample Analysis[a]
Lower Limit of Detection (LLD)

Analysis	Water (pCi/Kg)	Airborne Particulate or Gas (pCi/m3)	Fish (pCi/kg, wet)	Milk (pCi/Kg)	Food Products (pCi/Kg, wet)	Sediment (pCi/Kg, dry)
gross beta	4	1.0E-02				
H 3	3000[b]					
Mn 54	15		130			
Fe 59	30		260			
Co 58,60	15		130			
Zn 65	30		260			
Zr-Nb 95	15					
I 131	1	7.0E-02		1	60	
Cs 134	15	5.0E-02	130	15	60	150
Cs 137	18	6.0E-02	150	18	80	180
Ba-La 140	15			15		

Note: This list does not mean that only these nuclides are to be detected and reported. Other peaks which are measurable and identifiable, together with the above nuclides, shall also be identified and reported.

a) Environmental thermoluminescent dosimeters meet Regulatory Guide 4.13 (Revision 1) July, 1977.

b) The detection limit for drinking water affected by plant discharges shall be 2000 pCi/kg.

Table B5-3: Sample Station Locations

Media	Station	Location	Location Description
DR,AI,AP,VB,SO	001	1 mile N	Exclusion Zone at TX#521
DR	002	1 mile NNE	Exclusion Zone at TX#521
DR	003	1 mile NE	Exclusion Zone at TX#521
DR	004	1 mile ENE	Exclusion Zone at TX#521
DR	005	1 mile E	STPEGS Visitor Center
DR	006	1 mile ESE	Site near reservoir make-up pumping facility
DR	007	3.5 miles SE	Site on dike
DR	008	.5 mile SSE	Site on dike
DR	009	.25 mile S	Site on dike
DR	010	.25 miles SSW	Site on dike
DR	011	.5 mile SW	Site on dike
DR	012	1 mile WSW	Site on dike
DR	013	1 mile W	Exclusion Zone at TX#521
DR	014	1 mile WNW	Exclusion Zone at TX#521
DR,AI,AP,VB,SO,VP	015	1 mile NW	Exclusion Zone at TX#521
DR,AI,AP,VB,SO	016	1 mile NNW	Exclusion Zone at TX#521
DR	017	6 miles N	Buckeye on FM#1468
DR	018	5.5 miles NNE	Celanese Plant on FM#3057
DR	019	5 miles NE	FM#2668
DR	020	5 miles ENE	FM#2668
DR	021	5 miles E	TX#521
DR	022	7 miles ESE	DuPont Plant on TX#60
DR	023*	16 miles ENE	TX#521
DR	024	4 miles SSE	Site on dike
DR	025	4 miles S	Site on dike
DR	026	4 miles SSW	Site on dike
DR	027	2.5 miles SW	Site on dike
DR	028	5 miles WSW	FM#1095
DR	029	4.5 miles W	FM#1095
DR	030	6 miles WNW	Tres Palacios Oaks
DR	031	5.6 miles NW	Wilson Creek Rd
DR	032	3.5 miles NNW	FM#1468
DR,AI,AP,SO	033	14 miles NNE	Bay City
DR	034	8 miles ENE	Wadsworth
DR	035	8.5 miles SSE	Matagorda
DR	036	10 miles WSW	Collegeport
DR,AI,AP,VB,VP,SO	037*	11 miles WSW	Palacios sub station
DR	038	11 miles NW	Blessing
DR	039	9 miles NW	El Maton
DR	040	4.5 miles SE	Citrus Grove
WG	205	4 miles SE	Well #446A, 0.5 mile north of reservoir blowdown canal (30′ deep)
WG	206	4 miles SE	Well #446 0.5 mile north of reservoir blowdown canal (75′ Deep)
WG	207*	1.5 miles W	Well A#603A, 0.25 mile W of Tx 521 (75′ Deep)

Table B5-3: Sample Station Locations --Continued--

Media	Station	Location	Location Description
WG	208*	1.5 miles W	Well #603B, 0.25 mile W of Tx 521 Z)15-´ deep)
WS	209	2 miles E	Kelly´s Lake
WD	210	On Site	Approved drinking water supply
WS,SS	211	3.5 miles S	Site, E. Branch Little Robbins Slough
WS,SS	212	3.5 miles S	Little Robbins Slough
WS,SS	213	3 miles SE	Site, W. Branch Colorado River
**	214	2 miles E	Makeup Water Discharge (Reservoir)
SS	215	1 mile SW	Site, reservoir - Circulating water discharge
WS,SS,F	216	3 miles SSE	Site, reservoir - blowdown
**	217		Region 1 (mouth of Colorado River to marker 1)
**	218		Region 2 (marker 1 to 27)
**	219		Region 3 (marker 27 to Highway 521 overpass)
**	220*		Region 4 (highway 521 overpass to Bay City Dam)
SS,F	221*		Region 5 (above Bay City Dam)
**	222	> 10 miles	West Matagorda Bay
**	223	> 10 miles	East Matagorda Bay
**	224	> 10 miles	West Intercoastal Canal
**	225	> 10 miles	East Intercoastal Canal
WS	226*	5.5 miles NNE	Colorado River at Celanese Plant
WS,SS	227	6 miles SE	West Bank of Colorado River 1.5 miles downstream of STPEGS across from channel marker #22
WD	228*	14 miles NNE	Bay City public water supply
WS	229	1 mile SE	Drainage ditch north of reservoir that empties into the Colorado River upstream of the reservoir makeup pumping facility
SS	230	3.5 miles ESE	Colorado River at point where drainage ditch (station 229) empties into it
SO	231	11 miles WSW	Soil in vegetation plot at station #37

Table B5-3: Sample Station Locations --Continued--

Media	Station	Location	Location Description
SO	232	9 miles NW	Farm land behind station #39
SS	233	4.3 miles SE	Colorado River where blowdown discharge channel empties into it
SO	234	1 mile NW	Farm across from station #15

NOTES: * Control Station
** This station may be used to obtain the required aquatic samples in the vicinity of STPEGS that may be influenced by plant operations.

SAMPLE MEDIA CODES

WS	Surface Water
WG	Ground Water
WD	Drinking Water
SS	Shoreline Sediment
SO	Soil
F	Fish
VB	Broadleaf Vegetation
VP	Pasture Grass Vegetation
C	Crustacean
AP	Airborne Particulate
AI	Arborne Radioiodine
DR	Direct Radiation

Model of the release of Radioactive Materials from the STPEGS Reservoir for Use in Off Site Dose Calculations

(Revised February 17, 1987 by Gordon E. Williams)

Assumptions:

1. Activity released to the reservoir is not available for release off site for two weeks during which time it becomes mixed with previous releases. The mass flow of the reservoir water is such that it should take about two weeks for water to work its way around to the spillway. After one complete circuit (about three weeks) of the reservoir, a given release should have mixed into a much larger volume of water than was the original batch release.

2. Batch releases of liquid effluents to the reservoir are made every day or two and are of about the same magnitude and thus approximate a constant discharge rate (Ci/yr). This assumption along with the travel time of assumption #1 above helps assure that the radionuclides in the reservoir are fairly uniformly mixed.

3. The releases due to seepage and blowdown are constant and continuous (any release over the spillway is small and considered to be part of the routine blowdown activity). This assumption is accurate for the seepage but is only accurate for blowdown if large averaging times are considered. The model is based on annual averages which helps to smooth the descrete blowdown operations each year to approximate a continous activity.

4. The rate that radioactivity is lost from the reservoir is proportional to the amount of activity in the reservoir at any time. This assumption allows all losses from the reservoir to be treated mathematically the same way as radioactive decay. This assumption is accurate in so far that long averaging times allow descrete discharges to the reservoir and descrete releases from the reservoir off site to approximate continous processes.

5. Evaporation from the reservoir offers a release method for tritium and noble gases but does not affect any other radionuclides. This assumption is probably fairly accurate.

6. The volume of the reservoir remains constant.

Mathematical Relations:

Estimation of Remaining Batch Discharge Activity as a Function of Time

The remaining radioactivity, A(t), for a given radionuclide as a function of time after a single discharge of plant effluent into the reservoir is related to the initial discharge activity, A_o, as described below:

$$A(t) = A_o * e^{[-(Y + Yr) * t]}$$

where:

Y = release rate constant for water from the reservoir;
= (annual blowdown flow rate + seepage) ÷ reservoir volume)
= 0.125 per year;

Yr= the radioactive decay rate for the given nuclide;
= 0.693 ÷ (radioactive half-life in years);

(Y+Yr)= total loss rate (release plus radioactive) from the reservoir.

t = time since discharge (less 14 days) in years;

A_o= activity of a given radionuclide 14 days after discharge from the plant to the reservoir, Ci;

A(t)= current activity for a given radionuclide in the reservoir following a particular discharge event, Ci.

Reservoir Concentration

The concentration of a given radionuclide in the reservoir at a particular time since discharge is simply the activity remaining for the radionuclide, A(t), divided by the reservoir volume, V.

concentration = A ÷ V

Release Rate From the Reservoir

The rate of release for a given nuclide from the reservoir is a function of time since discharge from the plant to the reservoir as shown below:

release rate = (activity in the reservoir) * (release rate constant)

since Y = release rate constant (reservoir volumes per year)

and A(t) = amount of activity in the reservoir at time "t"

then

release rate = A(t) * Y

and substituting for A(t)

release rate = $Y * A_o * e^{[-(Y+Yr) * t]}$

Integrated Release from the Reservoir

The total release during any period of time can be estimated by intergating the release rate function above and evaluating it for that

time period.

$$\text{total release} = \int_{t=a}^{b} (\text{release rate})\, dt$$

$$= \int_{t=a}^{b} A_o * Y * e^{[-(Y+Yr) * t]}\, dt$$

$$= \frac{A_o * Y}{-(Y+Yr)} * \int_{t=a}^{b} -(Y+Yr) * e^{[-(Y+Yr) * t]}\, dt$$

$$= \frac{A_o * Y}{-(Y+Yr)} * \left(e^{[-(Y+Yr)*b]} - e^{[-(Y+Yr)*a]} \right)$$

$$= \frac{A_o * Y}{(Y+Yr)} * \left(e^{[-(Y+Yr)*a]} - e^{[-(Y+Yr)*b]} \right)$$

Example Release Calculation

Examples of how one would expect activity to leave STPEGS following a discharge to the reservoir from the plant follows. In this example three radionuclides are illustrated; a long lived nuclide such as Cs-137; a moderate half live nuclide such as Co-60; and a short lived nuclide shch as Fe-59. The reservoir release rate constant is Y = 0.1275 as described previously.

Value of integral from year "a" to year "b" Yr=*.**

a	b	Yr=0.023 per year	Yr=0.125 per year	Yr=8.32 per year
0	1	0.118 A_o	0.113 A_o	0.012 A_o
1	2	0.102 A_o	0.088 A_o	0.000 A_o
2	3	0.088 A_o	0.068 A_o	0.00
3	4	0.075 A_o	0.053 A_o	0.00
.	.	.	.	.
.	.	.	.	.
.	.	.	.	.
19	20	0.007 A_o	0.001 A_o	0.00
.	.	.	.	.
.	.	.	.	.
.	.	.	.	.
		0.00 A_o	0.000 A_o	0.000 A_o
total =		0.85 A_o	0.50 A_o	0.015 A_o

Discussion:

One can readily see from the table above that the release (and hence the off site dose) following a plant discharge to the reservoir is spread out in time particularily for the longer lived nuclides. If we assume that all of a given nuclide which is destine to leave STPEGS does so in the first year, we would assign the dose associated with the release indicated in the last line of the table in the first year and omit the releases listed for subsequent years.

This method is generally conservative since for nuclides with half lives greater than a couple of years, the dose estimate corresponding to the integrated release is several times larger than the true dose corresponding to the actual release in the first year. The only instance where the method might not be conservative is if in a given year a long lived nuclide accounted for a large fraction of the 3 mrem limit. If in the following year a short lived nuclide accounted for the dose, the dose estimate in that second year might be only about 90% of the dose actually delivered that year. This is because the long lived nuclide from the previous year would still be delivering off site dose the second year even though the model assigned all that dose the first year. In turn, the short lived nuclide would deliver virtually all its off site dose in the year it was actually released to the reservoir.

Conclusion:

Considering the uncertainties in estimating off site flow rates, the possibility of making a 10% error in the off site doses in consecutive years seems unimportant. Therefore, the ODCM will assign all dose related to the integrated release from the reservoir for a given discharge into the reservoir in the year of the discharge to the reservoir. This integrated release is simply

$$\text{total release} = \frac{A_0}{(Y+Yr)} * Y * \left(e^{[-(Y+Yr)*a]} - e^{[-(Y+Yr)*b]} \right)$$

evaluated with b = infinity (years) and
a = 0 (years).

$$\text{total release} = A_0 * \frac{Y}{Y + Yr}$$

[NOTE: This is equivalent to Reg. Guide 1.113, Eq. 42, with t= infinity]