ORIGINAL

QA Record

TVAN CALCULATION COVERSHEET/CCRIS UPDATE

Page i

REV 0 EDMS/RIMS NO.	EDMS TYPE:	EDMS ACCESSION NO (N/A for REV. 0)
R14 020307 102	calculations(nuclear)	

Calc Title: Level 3 Consequence Assessment for Browns Ferry Nuclear (SAMA)

CALC ID	TYPE	ORG	PLANT	BRANCH	NUMBER	CUR REV	NEW REV	
CURRENT	CN	NUC	BFN	MEB	MDN0-999-2001-0011	0		REVISION APPLICABILITY
NEW	CN	NUC						Entire calc ☐ Selected pages ☐

ACTION	NEW ☐ REVISION ☒	DELETE ☐ RENAME ☐	SUPERSEDE ☐ DUPLICATE ☐	CCRIS UPDATE ONLY ☐ (Verifier Approval Signatures Not Required)	No CCRIS Changes ☐ (For calc revision, CCRIS been reviewed and no CCRIS changes required)

UNITS	SYSTEMS	UNIDS
0	999	N/A

DCN,EDC,N/A	APPLICABLE DESIGN DOCUMENT(S)	CLASSIFICATION
N/A	N/A	D

QUALITY RELATED?	SAFETY RELATED? (If yes, QR = yes)	UNVERIFIED ASSUMPTION	SPECIAL REQUIREMENTS AND/OR LIMITING CONDITIONS?	DESIGN OUTPUT ATTACHMENT?	SAR/TS AFFECTED
Yes ☐ No ☒	Yes ☐ No ☒	Yes ☐ No ☒	Yes ☐ No ☒	Yes ☐ No ☒	Yes ☐ No ☒

PREPARER ID	PREPARER PHONE NO	PREPARING ORG (BRANCH)	VERIFICATION METHOD	NEW METHOD OF ANALYSIS
TEFENSTE	423-751-4124	MEB	Not Applicable	☐ Yes ☒ No

PREPARER SIGNATURE	DATE	CHECKER SIGNATURE	DATE
[signature]	1/18/2002	[signature]	1/18/02
VERIFIER SIGNATURE N/A	DATE N/A ~~1/24/02~~	APPROVAL SIGNATURE	DATE
[signature] CAMC		[signature]	3/7/2002

1/30/02 CAMC 1/30/02

STATEMENT OF PROBLEM/ABSTRACT

A Level 3 consequence assessment update has been completed for Browns Ferry Nuclear (BFN) Units 2 and 3 using the most recent version of the MACCS computer code referred to as MACCS2 V1.12 (MELCOR Accident Consequence Code System) (Ref.1). The MACCS2 V1.12 code was developed by Sandia National Laboratories for the NRC (and DOE) and follows a methodology similar to that of its predecessor, the CRAC2 (Ref.2) code. ~~used for the Level 3 analysis in the BFN PRA conducted in 1992.~~ The original version of MACCS (Ref.10) was used in the NUREG-1150 degraded core calculation (Ref.3). Definition of source terms was based on MAAP code runs completed during the IPE assessment reported in 1992. The 1980 site tower weather data was used to represent weather conditions at the site. The population data supplied by TVA for the year 2036 was used within 50 miles. Land use data was updated to 1996. Economic data was extrapolated to the year 2016 using two inflation rates for the future, 3% and 7%. All other site data was updated and extrapolated to be representative of the year 2036. Results were obtained for three types of fuel: uprated GE fuel, Framatome Commercial fuel, and Framatome BLEU fuel.

CAMC 2/28/02

MICROFICHE/EFICHE Yes ☐ No ☐ FICHE NUMBER(S)

☐ LOAD INTO EDMS AND DESTROY

☒ LOAD INTO EDMS AND RETURN CALCULATION TO CALCULATION LIBRARY. ADDRESS:POB TIC - BFNP

☐ LOAD INTO EDMS AND RETURN CALCULATION TO:

TVAN CALCULATION COVERSHEET/CCRIS UPDATE

CALC ID	TYPE	ORG	PLANT	BRANCH	NUMBER	REV
	CN	NUC	BFN	MEB	MDN0-999-2001-0011	0

ALTERNATE CALCULATION IDENTIFICATION

BLDG	ROOM	ELEV	COORD/AZIM	FIRM	Print Report Yes ☐
NA	NA	NA	NA	ABS	

CATEGORIES

KEY NOUNS (A-add, D-delete)

ACTION (A/D)	KEY NOUN	A/D	KEY NOUN
A	PRA		
A	PSA		
A	Consequence		
A	Assessment		

CROSS-REFERENCES (A-add, C-change, D-delete)

ACTION (A/C/D)	XREF CODE	XREF TYPE	XREF PLANT	XREF BRANCH	XREF NUMBER	XREF REV
A	P	CN	BFN	MEB	MDN0-999-2001-0016	0
A	S	CN	BFN	MEB	MDN0-999-2001-0018	0

CCRIS ONLY UPDATES:
Following are required only when making keyword/cross reference CCRIS updates and page 1 of form NEDP-2-1 is not included:

PREPARER SIGNATURE	DATE	CHECKER SIGNATURE	DATE
PREPARER PHONE NO. 3019079100	EDMS ACCESSION NO. R14 020307 102		

TVAN CALCULATION RECORD OF REVISION

CALCULATION IDENTIFIER MDN0-999-2001-0011

Title Level 3 Consequence Assessment for Browns Ferry Nuclear (SAMA)

Revision No.	DESCRIPTION OF REVISION
0	Original Issue Total number of pages = 274 SAR Sections 1, 2, and 14 have been reviewed by [signature] and this revision of the calculation does not affect the SAR. Tech Spec section 19.03 has been reviewed and determined not to be affected.

TVAN CALCULATION TABLE OF CONTENTS

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TVAN CALCULATION DESIGN VERIFICATION FORM

Calculation Identifier MDN0-999-2001-0011 Revision 0

Method of design verification used:

1. Design Review ☐
2. Alternate Calculation ☐
3. Qualification Test ☐

Design Verifier N/A Date N/A

Comments:

Not Applicable

TVAN COMPUTER INPUT FILE
STORAGE INFORMATION SHEET

Document MDN0-999-2001-0011	Rev. 0	Plant: BFN	

Subject:
Level 3 Consequence Assessment for Browns Ferry Nuclear (SAMA)

☐ Electronic storage of the input files for this calculation is not required. Comments:

Input Files on CD Supplied With Report

☐ Input files for this calculation have been stored electronically and sufficient identifying information is provided below for each input file. (Any retrieved file requires re-verification of its contents before use.)

All input and output files and the electronic copy of this calculation are stored in FILEKEEPER.

File Name: BFN_SAMA_Level_3_R2.zip
FILEKEEPER Reference ID = 303947

☐ Microfiche/eFiche

TVAN COMPUTER OUTPUT MICROFICHE INFORMATION SHEET			
Document	Rev. 0	Plant:	
Subject: **Level 3 Consequence Assessment For Browns Ferry Nuclear (Sama)** Copies of the input and output files are supplied on a Compact Disk rather than on microfiche. File descriptions are given below.			

Microfiche	Description
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Purpose

The purpose of this calculation is to provide consequence analysis for the Browns Ferry Nuclear Plant using site data appropriate for the results to be input into the SAMA economic model.

Introduction

In a probabilistic risk assessment of a nuclear power plant, the ultimate risk is expressed in terms of the health effects and economic impacts that a potential reactor accident would have on the surrounding population. For a particular nuclear plant site, the consequences depend on local meteorological conditions, population distribution, and nature of land usage as well as on the magnitude and characteristics of the radioactive release during the accident. This report describes the basic elements of the consequence analysis, site-specific information around Browns Ferry Nuclear Power Plant, and results of the consequence analysis. Because the results of this analysis are designed to be input into the SAMA economic model, the report focuses on the economic impacts rather than the health impacts.

Each of the major hypothetical accidents identified in the IPE Level 2 study (Ref.4) was assigned to one of several release categories based on the primary system and containment responses to the accident conditions calculated by the MAAP code (Ref.5). Each release category has associated release fractions of the initial core radionuclide inventory, which are used as input data to the consequence analysis model. The IPE-defined release categories were selected to provide more detail than is available with the latest BFN PSA model (LERF and NOLERF) such that relatively minor deltas in release category frequencies would be visible in the output of this calculation (to be used in the Severe Accident Mitigation Alternatives (SAMA) analysis). The current PSA models have been updated several times and the current Unit 2 CDF (1.23E-6) and LERF (2.46E-7) values are significantly less than CDF (7.7E-6) and LERF (3.5E-6) values reported in the 1992 IPE. Therefore the use of the 1992 IPE results for this calculation is acceptable.

Assuming that an accident can occur at any given time, there are various factors that would influence the accident consequences. One of the most important factors is the local meteorological conditions that exist at the time of accident. The meteorological data is the primary factor that dominates the transport and dispersion of the released radioactive plume. The meteorological data includes wind direction, wind speed, atmospheric stability (turbulence), and rainfall intensity. The atmospheric dispersion model used in this study is a standard Gaussian dispersion model that has been modified to include the effects of radioactive decay, thermal stability, wind speed, and precipitation as a function of time after the accident. Along with the atmospheric dispersion model, the dry and wet deposition processes are modeled to determine the air contamination and ground contamination along the plume pathway. Then the potential radiation dose accumulation is computed from cloud shine, ground shine, inhalation of radioactive material, and ingestion of contaminated food and milk. Evacuation and sheltering of the population are used to mitigate the health effects including early fatalities, latent cancer fatalities, and thyroid effects.

The results of the consequence analysis are presented in the form of complementary cumulative distribution functions (CCDFs). These distributions show the probabilities and magnitudes for various consequences such as early fatalities. The probabilities in a CCDF are presented as conditional probabilities. The conditional probability used in the context of this report are defined as the probability that a consequence of a certain magnitude will occur given that in-plant events leading to the particular ex-plant release under study ~~has~~ have occurred. These CCDFs are utilized to generate the overall risk curves when the plant systems and containment failure probabilities are incorporated.

CAMc 1/25/02

Design Input Data

Each full MACCS2 run (i.e., one that includes early and chronic dose for multiple meteorological scenarios) requires five input files: one for the ATMOS module, one for the EARLY module, one for the CHRONC module, the site data file, and the meteorological data file. Changes in the fuel type, the source term and some economic values are incorporated into the ATMOS module, so there is one ATMOS file for each combination of the three fuel types, seventeen MAAP runs that resulted in a release and the two assumed inflation rates. The site data file and CHRONC input file also depend on the inflation rate, so there are two of each of these files. The other files do not change between runs. ~~The files are listed on the TVAN Computer Input File Storage Information Sheet attached to this calculation.~~ CAMC 1/30/02

The release data was extracted from each MAAP run (Ref.6) into a Microsoft® Excel spreadsheet. Each spreadsheet was a copy of a template and had empty blocks for MAAP data, and calculations based on the blocks. A separate summary sheet was included to summarize the data, and to divide the data into release phases. Data was imported into the spreadsheet as follows:

1. The time of the first edit was copied to the spreadsheet.

2. The data from the "FISSION PRODUCT MASS BALANCE" edit was copied to a work area of the spreadsheet, parsed into columns and rearranged into block form, and copied to the appropriate block of the main part of the spreadsheet.

3. If the mass balance indicated that containment release had started, the data from the "FP MASS FRACTION STUCK IN SGTS: MASS FRAC RELEASED DIRECTLY TO ENVIRONMENT:" edit was copied to a work area of the spreadsheet, parsed into columns, and copied to the appropriate block of the main part of the spreadsheet.

If a release had occurred, the mass fraction released directly to the environment for each chemical species was determined, converted into the mass of the radionuclides in each release group, and compared to the original mass of the radionuclides in that group. This additional step was required because both cesium and tellurium are present in two chemical species, and because tellurium and antimony are considered one group in MACCS2.

The breakpoints between release phases was determined using engineering judgment, with the earlier phases being shorter than the later phases to increase the accuracy of the computation of early effects. MACCS treats each release phase as if it was released instantaneously at some point during the phase. If a sudden release (e.g., containment failure or hydrogen burn) occurred during the release interval, the release was assumed to occur at that time, otherwise, the center of the interval was used. All releases were considered to be zero energy ground releases. The warning time was determined by examining the sequence of events from the MAAP run, with a minimum of 10 minutes. It was assumed that it might take as long as 10 minutes to determine the plant condition and declare a General Emergency even for the most severe cases. On the other hand, for long-term problems such as loss of offsite power with a failure of the diesels, the operators would be well aware that the batteries would discharge after 4 hours, and would be prepared to declare a General Emergency at that time.

TVA supplied population data estimates for the year 2036 (Ref.9) for distances out to 50 miles. The ring spacing of the computation grid was chosen to match the distances in the population data table. Land fractions and region indexes were given in the Browns Ferry PRA Chapter 9 (Ref.13) in Table 9.3-7 (Ref.13) out to 50 miles. Watershed indexes were assigned based on the land fraction, with all spatial elements with some land being watershed 1 and spatial elements that are all water being watershed 2. Crop season and share were taken from Browns Ferry PRA Chapter 9 Table 9.3-8 (Ref.13).

Three types of fuel were considered. The isotopic inventory for the uprated General Electric fuel was taken from spreadsheet 'Worksheet FTR 802 Appendix B (doc 4)A.xls'. The isotopic inventory for the Framatome Commercial fuel was taken from spreadsheet 'commercialUTVA.xls' with actinide inventories taken from spreadsheet 'actinidesTVA.xls'. The isotopic inventory for the Framatome Blended Low-Enrichment Uranium (BLEU) fuel was taken from spreadsheet 'BLEU.TVA.xls' with actinide inventories taken from spreadsheet 'actinidesTVA.xls'. The available data set for each of these three types of fuel contained data for more than 650 isotopes, although the set of isotopes included was not the same for each fuel type. MACCS2 allows a maximum of 150 isotopes. The group of isotopes included was determined by first eliminating the isotopes with no dose factors available in the MACCS2 825-isotope data file, then eliminating isotopes that were not available for all three fuel types, and finally eliminating the isotopes that had the lowest activity after 30 minutes of decay. The final list of 150 isotopes includes more than 99% of the total fission product activity.

CAM 1/30/02

All costs in the code input files were determined by inflating existing costs used in the sample problems or taken from other sources to the year 2016. For times prior to 2000, the CPI was used to inflate the costs. Beyond 2000, two annual rates were used, 3% and 7%. The land use parameters were taken from or derived from values in the Microsoft Excel® spreadsheets linked to tables 1105, 1107, 1113, and 1142 of Ref.11, which include extended data not included in the printed version. Data from 1996 was used, that being the last year of complete data. No attempt was made to project land-use changes beyond 1996 because of the uncertainties involved. The effective return on real-estate investment was made by correcting the FHA mortgage rate for inflation over the years 1988 to 1997, years for which interest rates and inflation were under control.

ABS Consulting received one year of meteorological data from TVA. The data that was used was 1980 from the Browns Ferry meteorological tower. This year was selected and provided by TVA because it was deemed to be a representative year of meteorological data from the site area. The data recovery rate for all pertinent parameter was near 100%. Wind roses and joint frequency distributions that was run on this year of data all showed that it was typical for Browns Ferry. In general annual meteorological does not vary markedly from year to year. Each year will have some anomalies, but as long as the site instrumentation was working properly one year should be as good as the next. The data were in the standard integer (I17) format used for MACCS2 V1.12. The data consisted of the 10m wind direction (toward) by sector, (1-16 for N-NNW), 10m wind speed in tenths of meters per second, stability category (1-7 for A through G) determined by delta temperature (45m-10m) and accumulated precipitation for the hour in 100ths of inches. There was about 0.5% bad data in this original database. In order to edit out the periods of bad data and to make sure that the data received compared with the 1980 Browns Ferry joint frequency distribution, the I17 data were converted to MIDAS (Ref.12) format. The data were plotted using the MIDAS meteorological trend program to identify the bad data periods. There were short periods of bad data for wind speed, stability, and precipitation. For wind speed and stability, the bad hours were filled in by interpolating between the last good hours. For precipitation, the missing hours were all during periods when no precipitation was occurring; so all missing values were set to zero. The data was then converted back to the I17 format for use in the MACCS2 V1.12 model. In order to check the data, particularly the conversion of wind direction from the normal "from" value to "towards" values used by the model, joint frequency distributions were run on the data at ABS Consulting both before and after performing the edits. The joint frequency distribution of wind speed and direction versus delta temperature that was run before the edits agreed exactly with the ones received from TVA. The joint frequency distribution run after the edits agreed closely with TVA except for the 0.5% of data added to the database. The final database has been written to CD and will be kept with the other records for the project.

Most other input data are standard for all studies and was left the same as the input data supplied with the code. This includes the deposition data and the health effects data. When available, sheltering and evacuation data were taken from the 1992 BFN PRA (Ref.13), and noted in the EARLY input file. The remaining sheltering and evacuation data were taken from the input files supplied with MACCS2. Several sets of dispersion data were supplied with the code: The Tadmor/Gur dispersion data and the COMIDA2 food ingestion model were used (Ref.7). To improve the modeling of the tails (low frequency-high consequence accidents), the number of rain distance bins used was increased to 6, the maximum the code allows. The

breakpoints set to 2 miles, 5 miles, 10 miles, 20 miles, 30 miles, and 50 miles. The number of samples per bin was increased from 4 (the minimum suggested for probabilistic risk assessment) to 8 to increase the accuracy of the results.

The following tables give detailed references for the input data used in this calculation for the ATMOS, EARLY, and CHRONC modules of MACCS2, as well as for the data blocks in the site data file. The notation S in the reference column indicates data; such as run titles, calculational models used, and output options; which were selected by the analyst to meet the requirements of the project. The notation A in the reference column indicates that the data was determined by ABS Consulting by a variety of methods as discussed in the previous paragraphs of this section. The rest of the data items have one or more references as listed in the Reference section. In particular, Ref.1 refers to the test input data supplied with the code. In many cases, this is standard data that is not site or plant dependent, and was left unchanged either because it is universal (e.g., dose factors and health effects data) or is standard on most or all probabilistic risk assessments.

Data References for the ATMOS Module

Data Series	Description	Reference
RIATNAM1	Title describing ATMOS input file	S
GENUMRAD	Number of radial spatial elements	Ref.9
GESPAEND	Radial Distances in m	Ref.9
ISNUMSTB	Number of pseudo-stable nuclides	S
ISNAMSTB	Names of pseudo-stable nuclides	S
ISNUMISO	Number of isotopes considered	S
ISMAXGRP	Number of nuclide groups	Ref.1
ISDEPFLA	Wet and dry deposition flags	Ref.1
ISOTPGRP	Nuclide group data	S
WDCWASH1	Washout coefficient number one, linear factor	Ref.1
WDCWASH2	Washout coefficient number two, exponential factor	Ref.1
DDNPSGRP	Number of particle size groups	Ref.1
DDVDEPOS	Deposition velocity of each particle size group, m/s	Ref.1
NUM_DIST	Number of distances in plume-size tables	Ref.1
x-STB/DIS	Dispersion Parameters for stability class x	Ref.1
DPYSCALE	Linear scaling factor for sigma-y function, normally 1	Ref.1
DPZSCALE	Linear scaling factor for sigma-z function normally used for surface roughness length correction.	Ref.1
PMTIMBAS	Time base for expansion factor, seconds	Ref.1
PMBRKPNT	Break point for formula change, seconds	Ref.1
PMXPFAC1	Exponential expansion factor number 1	Ref.1
PMXPFAC2	Exponential expansion factor number 2	Ref.1
PRSCLCRW	Scaling factor for the critical wind speed for entrainment of a buoyant plume	Ref.1
PRSCLADP	Scaling factor for the A-D stability plume rise formula	Ref.1
PRSCLEFP	Scaling factor for the E-F stability plume rise formula	Ref.1
RDATNAM2	Release category name	S
RDOALARM	Warning time, s	Ref.6
RDNUMREL	Number of Plume Segments that are Released	Ref.6
RDMAXRIS	Risk Dominant Plume Number, 1<= RDMAXRIS<= RDNUMREL	Ref.6
RDREFTIM	Reference Time for Dispersion and Radioactive Decay (0<= RDREFTIM <=1)	Ref.6
RDPLHEAT	Heat Content of each release segment, W	A
RDPLHITE	Height of each plume segment at release, m	A
RDPLUDUR	Duration of each plume segment, s	Ref.6
RDPDELAY	Time of release for each plume segment, s after scram	Ref.6
SIGYINIT	Initial value of sigma-y for each plume segment, m	Ref.6
SIGZINIT	Initial value of sigma-z for each plume segment, m	Ref.6
WEBUILDH	Building height, m	Ref.6
RDPSDIST	Particle size distribution of each nuclide group	Ref.1
RDCORINV	Core inventory, end-of-cycle, Bq	Ref.8, Ref.13
RDCORSCA	Core inventory scaling factor	Ref.8
RDAPLFRC	Decay model	Ref. 1
RDRELFRC	Release Fractions for Isotope Groups in Release	Ref.6
OCENDAT1	Flag indicates this is the last program in the series to be run	S
OCIDEBUG	Debug Flag, Normally Off	Ref.1

Data Series	Description	Reference
OCNUCOUT	Name of the nuclide to be listed on the dispersion listings	Ref.1
TYPE0NUMBER	Number of Type 0 Output Edits	S
TYPE0OUT	Description of Type 0 Output Edits	S
M1METCOD	Meteorological sampling option code	S
M2LIMSPA	Last spatial interval for measured weather	S
M2BNDMXH	Boundary weather mixing layer height, m	Ref.1
M2IBDSTB	Boundary weather stability class index	Ref.1
M2BNDRAN	Boundary weather rain rate, mm/hr	Ref.1
M2BNDWND	Boundary weather wind speed, m/s	Ref.1
M4NRNINT	Number of rain distance intervals for binning	S
M4RNDSTS	Endpoints of the rain distance intervals, km	S
M4NRINTN	Number of rain intensity breakpoints	S
M4RNRATE	Rain intensity breakpoints for weather binning, mm/hr	S
M4NSMPLS	Number of samples per bin	S
M4IRSEED	Initial seed for random number generator	Ref.1

Data References for the EARLY Module

Data Series	Description	Reference
MIEANAM1	Title describing EARLY input file	S
DCF_FILE	Dose Factor File Name	Ref.1
MIORGDEF	Organ definitions	Ref.1
MIENDAT2	Flag indicates this is the last program in the series to be run	S
MIIPLUME	Dispersion model option code	S
MINUMFIN	Number of fine grid subdivisions used by the model	Ref.1
MIIPRINT	Level of debug output required, normal runs should specify zero	Ref.1
MIRISCAT	Logical flag signifying that the breakdown of risk by weather category bin are to be presented to show their relative contribution to the mean	S
MIOVRRID	Flag indicating if wind-roses from ATMOS are to be overridden	S
PDPOPFLG	Population distribution	Ref.9
SECSFACT	Cloud shielding factors	Ref.13
SEPROTIN	Protection factor for inhalation	Ref.1
SEBRRATE	Breathing rate (cubic meters per second)	Ref.13
SESKPFAC	Skin protection factor	Ref.1
SEGSHFAC	Ground shielding factor	Ref.13
SERESCON	Resuspension inhalation model concentration coefficient, 1/m	Ref.1
SERESHAF	Resuspension concentration coefficient half-life, s	Ref.1
EZEANAM2	Description of the emergency response scenario	Ref.1
EZWTNAME	Emergency response scenario weighting	Ref.1
EZWTFRAC	Weighting fraction applicable to this scenario	Ref.1
EZLASMOV	Last ring in the movement zone	Ref.1
TRAVELPOINT	Flag defining the time at which evacuees "enter" the destination element	Ref.1
EZESPEED	Radial evacuation speed (m/s)	Ref.13
EZEVATYP	Evacuation Type, radial or network	Ref.1
EZDURBEG	Duration of the initial phase of evacuation, s	Ref.1

Data Series	Description	Reference
EZDURMID	Duration of the middle phase of evacuation, s	Ref.1
EZREFPNT	Reference point for start of evacuation, alarm or arrival	Ref.1
EZNUMEVA	Number of radial spatial elements in sheltering/evacuation area	Ref.13
EZDLTSHL	Sheltering delay time, s	Ref.13
EZDLTEVA	Evacuation delay time, s	Ref.13
SRENDEMP	Duration of the emergency phase, seconds from plume arrival	Ref.1
SRCRIORG	Critical organ for relocation decisions	Ref.1
SRTIMHOT	Hot spot relocation time, seconds from plume arrival	Ref.1
SRTIMNRM	Normal relocation time, seconds from plume arrival	Ref.1
SRDOSHOT	Hot spot relocation dose criterion threshold, sv	Ref.1
SRDOSNRM	Normal relocation dose criterion threshold, sv	Ref.1
EFNUMEFA	Number of early fatality effects	Ref.1
EFATAGRP	Early fatality model parameters	Ref.1
EINUMEIN	Number of early injury effects	Ref.1
EINJUGRP	Early injury model parameters	Ref.1
LCNUMACA	Number of acute exposure cancer effects	Ref.1
LCDDTHRE	Threshold dose for applying the dose dependent reduction factor	Ref.1
LCACTHRE	Dose threshold for linear dose response, sv	Ref.1
LCANCERS	Acute exposure cancer model parameters	Ref.1
TYPE1NUMBER	Number of type 1 output edits requested	S
TYPE1OUT	Specifications for each type 1 output edit	S
TYPE2NUMBER	Number of type 2 output edits requested	S
TYPE2OUT	Specifications for each type 2 output edit	S
TYPE3NUMBER	Number of type 3 output edits requested	S
TYPE3OUT	Specifications for each type 3 output edit	S
TYPE4NUMBER	Number of type 4 output edits requested	S
TYPE4OUT	Specifications for each type 4 output edit	S
TYPE5NUMBER	Number of type 5 output edits requested	S
TYPE5OUT	Specifications for each type 5 output edit	S
TYPE6NUMBER	Number of type 6 output edits requested	S
TYPE6OUT	Specifications for each type 6 output edit	S
TYPE7NUMBER	Number of type 7 output edits requested	S
TYPE7OUT	Specifications for each type 7 output edit	S
TYPE8NUMBER	Number of type 8 output edits requested	S
TYPE8OUT	Specifications for each type 8 output edit	S
TYPEANUMBER	Number of type A output edits requested	S
TYPEAOUT	Specifications for each type A output edit	S

Data References for the CHRONC Module

Data Series	Description	Reference
CHCHNAME	Title describing CHRONC input file	S
CHEVACST	Daily cost for a person who is evacuated, $/person-day	Ref.13, Ref.11
CHRELCST	Daily cost for a person who is relocated, $/person-day	Ref.13, Ref.11
DUR_INTPHAS	Duration of the intermediate phase period, s	Ref.1
CHTMPACT	Long-term phase dose projection period	Ref.1

Data Series	Description	Reference
CHDSCRTI	Dose criterion for intermediate phase relocation, sv	Ref.1
CHDSCRLT	Dose criterion for long-term phase relocation, sv	Ref.1
CHCRTOCR	Critical organ name for long-term actions	Ref.1
CHEXPTIM	Long term exposure period	Ref.1
CHLVLDEC	Number of levels of decontamination	Ref.1
CHTIMDEC	Decontamination times for each level, s	Ref.1
CHDSRFCT	Dose reduction factors for each level	Ref.1
CHCDFRM0	Cost of farm decontamination, $/hectare	Ref.13, Ref.11
CHCDNFRM	Cost of non-farm decontamination, $/person	Ref.13, Ref.11
CHFRFDL0	Fraction of farmland decontamination cost due to labor	Ref.1
CHFRNFDL	Fraction of non-farm decontamination cost due to labor	Ref.1
CHTFWKF0	Fraction of time workers in farm areas spend in contaminated areas	Ref.1
CHTFWKNF	Fraction of time workers in non-farm areas spend in contaminated areas	Ref.1
CHDLBCST	Average cost of decontamination labor, $/man-year	Ref.1, Ref.11
CHDPRATE	Depreciation rate during interdiction period	Ref.1
CHDSRATE	Real estate income return adjusted for inflation	Ref.11
CHPOPCST	Population relocation cost, $/person	Ref.1, Ref.11
CHNGWTRM	Number of terms in the ground shine weathering relationship	Ref.1
CHGWCOEF	Ground shine weathering coefficients	Ref.1
CHTGWHLF	Half-lives corresponding to the ground shine weathering coefficients, s	Ref.1
CHNRWTRM	Number of terms in the resuspension weathering relationship	Ref.1
CHRWCOEF	Resuspension concentration coefficients, 1/m	Ref.1
CHTRWHLF	Half-lives corresponding to the resuspension concentration coefficients	Ref.1
CHFRACLD	Fraction of area that is land in the region	Ref.1
CHFRCFRM	Fraction of land devoted to farming in the region	Ref.13
CHFRMPRD	Average value of annual farm production	Ref.11
CHDPFRCT	Fraction of farm production from dairy production	Ref.13
CHVALWF0	Value of farm wealth, $/hectare	Ref.11
CHFRFIM0	Fraction of farm wealth in improvements for the region	Ref.1
CHVALWNF	Non-farm wealth, property and improvements, $/person	A
CHFRNFIM	Fraction of non-farm wealth in improvements	Ref.1
CHFDPATH	Ingestion model	Ref.1
BIN_FILE	COMIDA binary output file (ingestion model)	Ref.1
DOSEMILK	Dose limits for ingestion of milk, sv	Ref.1
DOSEOTHR	Dose limits for ingestion of other crops, sv	Ref.1
DOSELONG	Long term dose limits, sv	Ref.1
CHNUMWPI	Number of nuclides in the water ingestion pathway model	Ref.1
CHWTRISO	Water ingestion pathway model nuclide definitions	Ref.1
CHKSWTCH	Detailed print option control switches	S
TYPE9NUMBER	Number of type 9 output edits requested	S
TYPE9OUT	Specifications for each type 9 output edit	S
TYP10NUMBER	Number of type 10 output edits requested	S
TYP10OUT	Specifications for each type 10 output edit	S
TYP11FLAG11	Turn on action distance results	S
TYP10NUMBER	Number of type 10 output edits requested	S

Data Series	Description	Reference
TYP10OUT	Specifications for each type 10 output edit	S
TYP12NUMBER	Number of type 12 output edits requested	S
TYP12OUT	Specifications for each type 12 output edit	S
TYP13NUMBER	Number of type 13 output edits requested	S
TYP13OUT	Specifications for each type 13 output edit	S

Data References for the Site Data File

Data Block	Description	Reference
SPATIAL DISTANCES	Distances in grid	Ref.1
POPULATION	Population in each grid element	Ref.9, Ref.6
LAND FRACTION	Fraction of land in each grid element	Ref.13, A
REGION INDEX	State or province for each grid element	Ref.13, A
WATERSHED INDEX	Watershed for each grid element	Ref.13, A
CROP SEASON AND SHARE	Start and end of growing season and fraction of farmland devoted to each crop	Ref.13
WATERSHED DEFINITION	Ingestion factor for each watershed class	A
REGIONAL ECONOMIC DATA	Land use and farm economic data for each region	Ref.11

Assumptions

There were few assumptions made other than those outlined in the discussion of the design input. ~~All costs were assumed to be in 2016 dollars, and cases with annual inflation rates of 3% and 7% after the year 2000 were run.~~ A minimum of 10 minutes from accident initiation to the declaration of a general emergency was assumed. It was conservatively assumed that all releases had no sensible energy and were released at ground level. CAMC 1/29/02

Special Requirements/Limiting Conditions

None.

Calculations

A total of 102 MACCS2 cases were run, one for each combination of fuel type, MAAP source term, and long term inflation rate. The input and output files are on the CD supplied with this report, along with six Microsoft Excel® files, one for each combination of fuel type and inflation rate. The output files are too voluminous to include in printed form in this calculation.

Results

The full results are included in the output files. ~~listed in the TVAN Computer Output Microfiche Information Sheet.~~ Selected Complementary Cumulative Distribution Functions (CCDFs) have been extracted from the output files and tabulated in the Microsoft Excel files specified on the TVAN Computer Output Microfiche Information Sheet. All of these files are included on the CD supplied with this report. The population dose for 0-50 miles for each source term and fuel type is shown in Table 1. The mean latent cancer fatalities within 50 miles from each source term and fuel type are shown in Table 2. The mean number of selected types of economic damage for each source term, fuel type, and inflation rate are shown in Tables 3 through 8. The mean area and population interdicted for each source term and fuel type is shown in Tables 9 through 11. CAMC 1/25/02

MAPP Case	Effective 50y Dose 0-50 mi (rem)		
	GE Uprated	Framatome Commercial	Framatome BLEU
ENMKCTT	5.39E+06	5.53E+06	5.56E+06
MIALF	3.47E+05	3.57E+05	3.56E+05
NIH	7.25E+05	7.55E+05	7.57E+05
NIHNSP	3.75E+05	3.90E+05	3.91E+05
OIA	2.81E+06	2.86E+06	2.88E+06
OIALF	1.14E+05	1.16E+05	1.15E+05
PID	6.84E+04	6.94E+04	6.96E+04
PIDNSP	1.48E+05	1.47E+05	1.59E+05
PIHDEP	3.48E+06	3.58E+06	3.59E+06
PIHDEPV	2.84E+06	2.94E+06	2.96E+06
PIHDHB	6.59E+06	6.60E+06	7.91E+06
PIHDLF	4.85E+06	4.92E+06	5.27E+06
PIHDLV	2.21E+06	2.32E+06	2.35E+06
PIHNDP	2.22E+06	2.33E+06	2.36E+06
PJH	1.99E+05	2.04E+05	2.02E+05
PJHNSP	4.47E+06	4.59E+06	4.59E+06
PLF	3.56E+05	3.66E+05	3.69E+05

Table 1. Mean Population Dose in person-rem by MAAP run ID and fuel type.

MAPP Case	Latent Cancer Fatalities		
	GE Uprated	Framatome Commercial	Framatome BLEU
ENMKCTT	2.70E+01	2.76E+01	2.78E+01
MIALF	1.74E+00	1.79E+00	1.78E+00
NIH	3.63E+00	3.77E+00	3.79E+00
NIHNSP	1.88E+00	1.95E+00	1.95E+00
OIA	1.41E+01	1.43E+01	1.44E+01
OIALF	5.68E-01	5.80E-01	5.74E-01
PID	3.42E-01	3.47E-01	3.48E-01
PIDNSP	7.42E-01	7.36E-01	7.97E-01
PIHDEP	1.74E+01	1.79E+01	1.79E+01
PIHDEPV	1.42E+01	1.47E+01	1.48E+01
PIHDHB	3.30E+01	3.30E+01	3.96E+01
PIHDLF	2.43E+01	2.46E+01	2.63E+01
PIHDLV	1.10E+01	1.16E+01	1.18E+01
PIHNDP	1.11E+01	1.16E+01	1.18E+01
PJH	9.97E-01	1.02E+00	1.01E+00
PJHNSP	2.24E+01	2.30E+01	2.29E+01
PLF	1.78E+00	1.83E+00	1.84E+00

Table 2. Mean number of latent cancer fatalities by MAAP run ID and fuel type.

MAPP Case	Economic Cost (2016$, 3% Inflation) for GE Uprated Fuel						
	Total Cost	Decontamination		Interdiction		Condemnation	
		Population	Farm	Population	Farm	Population	Farm
ENMKCTT	1.16E+10	2.99E+09	8.42E+07	6.25E+09	6.20E+07	2.06E+09	1.33E+07
MIALF	1.49E+08	4.64E+07	1.12E+06	9.13E+07	2.61E+06	3.31E+06	3.14E+04
NIH	7.49E+08	2.33E+08	5.75E+06	4.70E+08	8.41E+06	2.08E+07	1.90E+05
NIHNSP	1.95E+08	6.00E+07	1.48E+06	1.22E+08	3.23E+06	4.40E+06	3.97E+04
OIA	7.81E+09	1.84E+09	5.31E+07	4.14E+09	3.76E+07	1.67E+09	1.10E+07
OIALF	1.83E+07	5.62E+06	2.04E+05	1.11E+07	5.26E+05	4.77E+04	1.16E+03
PID	1.42E+07	4.33E+06	1.42E+05	8.67E+06	3.25E+05	1.60E+05	1.96E+03
PIDNSP	5.84E+07	1.70E+07	4.79E+05	3.70E+07	1.21E+06	1.42E+05	3.95E+04
PIHDEP	8.13E+09	2.44E+09	6.69E+07	4.64E+09	5.07E+07	8.50E+08	5.41E+06
PIHDEPV	6.61E+09	1.90E+09	5.30E+07	3.73E+09	4.01E+07	8.16E+08	5.43E+06
PIHDHB	1.13E+10	3.29E+09	8.82E+07	6.39E+09	5.98E+07	1.29E+09	1.82E+07
PIHDLF	1.04E+10	2.54E+09	7.07E+07	5.65E+09	5.34E+07	1.93E+09	1.37E+07
PIHDLV	3.92E+09	1.26E+09	3.17E+07	2.40E+09	3.01E+07	1.58E+08	1.38E+06
PIHNDP	3.92E+09	1.26E+09	3.17E+07	2.40E+09	3.02E+07	1.57E+08	1.38E+06
PJH	6.14E+07	1.79E+07	4.71E+05	4.00E+07	9.74E+05	4.85E+05	9.82E+03
PJHNSP	9.08E+09	2.32E+09	6.41E+07	5.07E+09	5.20E+07	1.49E+09	1.02E+07
PLF	1.64E+08	4.96E+07	1.25E+06	1.04E+08	2.90E+06	1.76E+06	3.19E+04

Table 3. Mean number of economic effects assuming 3% inflation for GE Uprated fuel by MAAP run ID.

MAPP Case	Economic Cost (2016$, 7% Inflation) for GE Uprated Fuel						
	Total Cost	Decontamination		Interdiction		Condemnation	
		Population	Farm	Population	Farm	Population	Farm
ENMKCTT	2.13E+10	5.51E+09	1.55E+08	1.15E+10	1.14E+08	3.79E+09	2.44E+07
MIALF	2.73E+08	8.53E+07	2.06E+06	1.68E+08	4.79E+06	6.09E+06	5.78E+04
NIH	1.38E+09	4.28E+08	1.06E+07	8.65E+08	1.55E+07	3.82E+07	3.49E+05
NIHNSP	3.59E+08	1.10E+08	2.72E+06	2.24E+08	5.95E+06	8.10E+06	7.30E+04
OIA	1.44E+10	3.39E+09	9.76E+07	7.61E+09	6.91E+07	3.08E+09	2.03E+07
OIALF	3.37E+07	1.03E+07	3.75E+05	2.05E+07	9.68E+05	8.78E+04	2.14E+03
PID	2.60E+07	7.97E+06	2.61E+05	1.60E+07	5.98E+05	2.95E+05	3.60E+03
PIDNSP	1.07E+08	3.13E+07	8.80E+05	6.80E+07	2.22E+06	2.62E+05	7.26E+04
PIHDEP	1.50E+10	4.50E+09	1.23E+08	8.53E+09	9.33E+07	1.56E+09	9.95E+06
PIHDEPV	1.22E+10	3.50E+09	9.75E+07	6.87E+09	7.38E+07	1.50E+09	9.99E+06
PIHDHB	2.08E+10	6.05E+09	1.62E+08	1.18E+10	1.10E+08	2.38E+09	3.34E+07
PIHDLF	1.91E+10	4.67E+09	1.30E+08	1.04E+10	9.82E+07	3.54E+09	2.52E+07
PIHDLV	7.22E+09	2.32E+09	5.83E+07	4.41E+09	5.53E+07	2.90E+08	2.53E+06
PIHNDP	7.21E+09	2.31E+09	5.83E+07	4.41E+09	5.55E+07	2.89E+08	2.53E+06
PJH	1.13E+08	3.30E+07	8.67E+05	7.36E+07	1.79E+06	8.92E+05	1.81E+04
PJHNSP	1.67E+10	4.27E+09	1.18E+08	9.32E+09	9.57E+07	2.73E+09	1.88E+07
PLF	3.03E+08	9.12E+07	2.30E+06	1.92E+08	5.33E+06	3.23E+06	5.87E+04

Table 4. Mean number of economic effects assuming 7% inflation for GE Uprated fuel by MAAP run ID.

MAPP Case	Economic Cost (2016$, 3% Inflation) for Framatome Commercial Fuel						
	Total Cost	Decontamination		Interdiction		Condemnation	
		Population	Farm	Population	Farm	Population	Farm
ENMKCTT	1.13E+10	2.91E+09	8.14E+07	6.07E+09	6.11E+07	2.10E+09	1.38E+07
MIALF	1.41E+08	4.36E+07	1.06E+06	8.65E+07	2.44E+06	3.60E+06	3.33E+04
NIH	7.19E+08	2.23E+08	5.51E+06	4.50E+08	8.12E+06	2.16E+07	1.99E+05
NIHNSP	1.79E+08	5.48E+07	1.36E+06	1.11E+08	3.13E+06	4.85E+06	4.22E+04
OIA	7.72E+09	1.80E+09	5.19E+07	4.01E+09	3.67E+07	1.74E+09	1.15E+07
OIALF	1.72E+07	5.23E+06	1.91E+05	1.04E+07	4.97E+05	5.10E+04	1.33E+03
PID	1.35E+07	4.08E+06	1.34E+05	8.27E+06	3.17E+05	1.67E+05	2.02E+03
PIDNSP	5.13E+07	1.48E+07	4.23E+05	3.21E+07	1.22E+06	1.36E+05	4.16E+04
PIHDEP	8.00E+09	2.40E+09	6.54E+07	4.51E+09	5.00E+07	8.83E+08	5.69E+06
PIHDEPV	6.46E+09	1.86E+09	5.13E+07	3.60E+09	3.91E+07	8.47E+08	5.71E+06
PIHDHB	1.11E+10	3.20E+09	8.51E+07	6.15E+09	5.85E+07	1.39E+09	2.00E+07
PIHDLF	1.01E+10	2.45E+09	6.82E+07	5.42E+09	5.23E+07	2.01E+09	1.42E+07
PIHDLV	3.76E+09	1.20E+09	3.02E+07	2.30E+09	2.96E+07	1.63E+08	1.44E+06
PIHNDP	3.76E+09	1.20E+09	3.01E+07	2.29E+09	2.97E+07	1.63E+08	1.42E+06
PJH	5.90E+07	1.72E+07	4.53E+05	3.84E+07	9.25E+05	5.19E+05	1.02E+04
PJHNSP	8.87E+09	2.24E+09	6.19E+07	4.89E+09	5.13E+07	1.54E+09	1.05E+07
PLF	1.50E+08	4.44E+07	1.13E+06	9.55E+07	2.78E+06	1.79E+06	3.61E+04

Table 5. Mean number of economic effects assuming 3% inflation for Framatome Commercial fuel by MAAP run ID.

MAPP Case	Economic Cost (2016$, 7% Inflation) for Framatome Commercial Fuel						
	Total Cost	Decontamination		Interdiction		Condemnation	
		Population	Farm	Population	Farm	Population	Farm
ENMKCTT	2.09E+10	5.35E+09	1.50E+08	1.12E+10	1.12E+08	3.86E+09	2.53E+07
MIALF	2.59E+08	8.02E+07	1.95E+06	1.59E+08	4.49E+06	6.63E+06	6.12E+04
NIH	1.32E+09	4.10E+08	1.01E+07	8.28E+08	1.49E+07	3.98E+07	3.66E+05
NIHNSP	3.30E+08	1.01E+08	2.51E+06	2.04E+08	5.76E+06	8.92E+06	7.76E+04
OIA	1.42E+10	3.32E+09	9.54E+07	7.39E+09	6.75E+07	3.20E+09	2.12E+07
OIALF	3.16E+07	9.63E+06	3.52E+05	1.92E+07	9.15E+05	9.38E+04	2.45E+03
PID	2.48E+07	7.50E+06	2.47E+05	1.52E+07	5.83E+05	3.07E+05	3.72E+03
PIDNSP	9.44E+07	2.72E+07	7.78E+05	5.91E+07	2.24E+06	2.50E+05	7.66E+04
PIHDEP	1.47E+10	4.41E+09	1.20E+08	8.31E+09	9.20E+07	1.62E+09	1.05E+07
PIHDEPV	1.19E+10	3.42E+09	9.43E+07	6.62E+09	7.20E+07	1.56E+09	1.05E+07
PIHDHB	2.03E+10	5.88E+09	1.57E+08	1.13E+10	1.08E+08	2.55E+09	3.68E+07
PIHDLF	1.86E+10	4.51E+09	1.25E+08	9.98E+09	9.61E+07	3.70E+09	2.62E+07
PIHDLV	6.92E+09	2.21E+09	5.56E+07	4.22E+09	5.44E+07	2.99E+08	2.65E+06
PIHNDP	6.91E+09	2.21E+09	5.54E+07	4.22E+09	5.46E+07	3.00E+08	2.61E+06
PJH	1.09E+08	3.17E+07	8.34E+05	7.07E+07	1.70E+06	9.55E+05	1.88E+04
PJHNSP	1.63E+10	4.12E+09	1.14E+08	8.99E+09	9.43E+07	2.83E+09	1.94E+07
PLF	2.76E+08	8.16E+07	2.07E+06	1.76E+08	5.12E+06	3.29E+06	6.64E+04

Table 6. Mean number of economic effects assuming 7% inflation for Framatome Commercial fuel by MAAP run ID.

MAPP Case	Economic Cost (2016$, 3% Inflation) for Framatome BLEU Fuel						
	Total Cost	Decontamination		Interdiction		Condemnation	
		Population	Farm	Population	Farm	Population	Farm
ENMKCTT	1.12E+10	2.88E+09	8.06E+07	5.97E+09	6.06E+07	2.09E+09	1.35E+07
MIALF	1.37E+08	4.20E+07	1.02E+06	8.41E+07	2.42E+06	3.60E+06	3.21E+04
NIH	6.97E+08	2.16E+08	5.36E+06	4.36E+08	7.98E+06	2.14E+07	1.97E+05
NIHNSP	1.71E+08	5.25E+07	1.30E+06	1.05E+08	3.05E+06	4.80E+06	4.17E+04
OIA	7.57E+09	1.77E+09	5.10E+07	3.95E+09	3.63E+07	1.70E+09	1.14E+07
OIALF	1.67E+07	5.04E+06	1.85E+05	1.01E+07	4.85E+05	5.10E+04	1.28E+03
PID	1.37E+07	4.16E+06	1.37E+05	8.39E+06	3.14E+05	1.61E+05	2.02E+03
PIDNSP	6.98E+07	2.05E+07	5.59E+05	4.49E+07	1.18E+06	1.36E+05	4.19E+04
PIHDEP	7.90E+09	2.37E+09	6.46E+07	4.44E+09	4.94E+07	8.80E+08	5.56E+06
PIHDEPV	6.32E+09	1.82E+09	5.04E+07	3.51E+09	3.87E+07	8.38E+08	5.52E+06
PIHDHB	1.14E+10	3.27E+09	8.68E+07	6.39E+09	5.81E+07	1.36E+09	2.04E+07
PIHDLF	1.02E+10	2.48E+09	6.91E+07	5.48E+09	5.19E+07	1.97E+09	1.41E+07
PIHDLV	3.72E+09	1.19E+09	2.99E+07	2.27E+09	2.91E+07	1.61E+08	1.41E+06
PIHNDP	3.72E+09	1.18E+09	2.98E+07	2.27E+09	2.91E+07	1.61E+08	1.41E+06
PJH	5.76E+07	1.68E+07	4.42E+05	3.75E+07	8.93E+05	5.18E+05	1.02E+04
PJHNSP	8.75E+09	2.22E+09	6.13E+07	4.81E+09	5.06E+07	1.53E+09	1.04E+07
PLF	1.54E+08	4.60E+07	1.17E+06	9.75E+07	2.73E+06	1.76E+06	3.60E+04

Table 7. Mean number of economic effects assuming 3% inflation for Framatome BLEU fuel by MAAP run ID.

MAPP Case	Economic Cost (2016$, 7% Inflation) for Framatome BLEU Fuel						
	Total Cost	Decontamination		Interdiction		Condemnation	
		Population	Farm	Population	Farm	Population	Farm
ENMKCTT	2.06E+10	5.30E+09	1.48E+08	1.10E+10	1.11E+08	3.85E+09	2.48E+07
MIALF	2.51E+08	7.73E+07	1.88E+06	1.55E+08	4.45E+06	6.63E+06	5.90E+04
NIH	1.28E+09	3.97E+08	9.86E+06	8.02E+08	1.47E+07	3.93E+07	3.63E+05
NIHNSP	3.14E+08	9.65E+07	2.40E+06	1.92E+08	5.61E+06	8.83E+06	7.67E+04
OIA	1.39E+10	3.26E+09	9.39E+07	7.26E+09	6.67E+07	3.13E+09	2.10E+07
OIALF	3.06E+07	9.27E+06	3.41E+05	1.87E+07	8.92E+05	9.38E+04	2.36E+03
PID	2.52E+07	7.66E+06	2.52E+05	1.54E+07	5.77E+05	2.97E+05	3.72E+03
PIDNSP	1.28E+08	3.76E+07	1.03E+06	8.26E+07	2.18E+06	2.50E+05	7.70E+04
PIHDEP	1.45E+10	4.37E+09	1.19E+08	8.17E+09	9.08E+07	1.62E+09	1.02E+07
PIHDEPV	1.16E+10	3.34E+09	9.27E+07	6.45E+09	7.12E+07	1.54E+09	1.02E+07
PIHDHB	2.09E+10	6.01E+09	1.60E+08	1.18E+10	1.07E+08	2.50E+09	3.76E+07
PIHDLF	1.87E+10	4.56E+09	1.27E+08	1.01E+10	9.55E+07	3.63E+09	2.60E+07
PIHDLV	6.84E+09	2.18E+09	5.49E+07	4.17E+09	5.35E+07	2.97E+08	2.59E+06
PIHNDP	6.84E+09	2.18E+09	5.48E+07	4.17E+09	5.36E+07	2.96E+08	2.60E+06
PJH	1.06E+08	3.09E+07	8.13E+05	6.90E+07	1.64E+06	9.53E+05	1.88E+04
PJHNSP	1.61E+10	4.08E+09	1.13E+08	8.84E+09	9.30E+07	2.81E+09	1.91E+07
PLF	2.83E+08	8.45E+07	2.15E+06	1.79E+08	5.02E+06	3.24E+06	6.62E+04

Table 8. Mean number of economic effects assuming 7% inflation for Framatome BLEU fuel by MAAP run ID.

MAPP Case	Area and Persons Affected, GE Uprated Fuel					
	Decontamination		Interdiction		Condemnation	
	Population	Farm	Population	Farm	Population	Farm
ENMKCTT	2.48E+05	4.88E+04	2.48E+05	6.36E+04	1.42E+04	2.15E+03
MIALF	5.20E+03	8.09E+02	5.20E+03	2.89E+03	2.28E+01	5.10E+00
NIH	2.74E+04	4.45E+03	2.74E+04	9.54E+03	1.43E+02	3.08E+01
NIHNSP	7.07E+03	1.11E+03	7.07E+03	3.72E+03	3.03E+01	6.44E+00
OIA	1.51E+05	3.01E+04	1.51E+05	3.71E+04	1.15E+04	1.79E+03
OIALF	6.54E+02	1.56E+02	6.54E+02	5.94E+02	3.29E-01	1.89E-01
PID	5.13E+02	1.10E+02	5.13E+02	3.80E+02	1.10E+00	3.17E-01
PIDNSP	2.27E+03	3.88E+02	2.27E+03	1.74E+03	9.80E-01	6.41E+00
PIHDEP	2.04E+05	3.98E+04	2.04E+05	5.48E+04	5.86E+03	8.78E+02
PIHDEPV	1.61E+05	3.18E+04	1.61E+05	4.40E+04	5.63E+03	8.81E+02
PIHDHB	2.64E+05	5.07E+04	2.64E+05	6.37E+04	8.90E+03	2.93E+03
PIHDLF	2.26E+05	4.41E+04	2.26E+05	5.68E+04	1.33E+04	2.21E+03
PIHDLV	1.24E+05	2.21E+04	1.24E+05	3.54E+04	1.09E+03	2.24E+02
PIHNDP	1.24E+05	2.21E+04	1.24E+05	3.55E+04	1.08E+03	2.23E+02
PJH	2.43E+03	3.70E+02	2.43E+03	1.15E+03	3.34E+00	1.59E+00
PJHNSP	2.06E+05	3.93E+04	2.06E+05	5.50E+04	1.02E+04	1.66E+03
PLF	6.15E+03	9.57E+02	6.15E+03	3.52E+03	1.21E+01	5.18E+00

Table 9. Mean area (hectares) and number of persons affected by decontaminated, interdicted, and condemned land for GE Uprated fuel tabulated by MAAP run ID.

MAPP Case	Area and Persons Affected, Framatome Commercial Fuel					
	Decontamination		Interdiction		Condemnation	
	Population	Farm	Population	Farm	Population	Farm
ENMKCTT	2.42E+05	4.76E+04	2.42E+05	6.31E+04	1.45E+04	2.23E+03
MIALF	4.94E+03	7.69E+02	4.94E+03	2.71E+03	2.48E+01	5.40E+00
NIH	2.62E+04	4.28E+03	2.62E+04	9.23E+03	1.49E+02	3.23E+01
NIHNSP	6.43E+03	1.02E+03	6.43E+03	3.66E+03	3.34E+01	6.85E+00
OIA	1.48E+05	2.95E+04	1.48E+05	3.64E+04	1.20E+04	1.87E+03
OIALF	6.11E+02	1.47E+02	6.11E+02	5.76E+02	3.52E-01	2.16E-01
PID	4.91E+02	1.06E+02	4.91E+02	3.78E+02	1.15E+00	3.28E-01
PIDNSP	1.97E+03	3.46E+02	1.97E+03	1.78E+03	9.39E-01	6.76E+00
PIHDEP	2.01E+05	3.91E+04	2.01E+05	5.43E+04	6.08E+03	9.23E+02
PIHDEPV	1.57E+05	3.07E+04	1.57E+05	4.33E+04	5.84E+03	9.26E+02
PIHDHB	2.59E+05	4.96E+04	2.59E+05	6.29E+04	9.57E+03	3.23E+03
PIHDLF	2.19E+05	4.25E+04	2.19E+05	5.56E+04	1.39E+04	2.30E+03
PIHDLV	1.20E+05	2.13E+04	1.20E+05	3.50E+04	1.12E+03	2.34E+02
PIHNDP	1.19E+05	2.11E+04	1.19E+05	3.51E+04	1.12E+03	2.30E+02
PJH	2.34E+03	3.57E+02	2.34E+03	1.09E+03	3.58E+00	1.66E+00
PJHNSP	2.00E+05	3.80E+04	2.00E+05	5.42E+04	1.06E+04	1.71E+03
PLF	5.66E+03	8.81E+02	5.66E+03	3.47E+03	1.23E+01	5.86E+00

Table 10. Mean area (hectares) and number of persons affected by decontaminated, interdicted, and condemned

land for Framatome Commercial fuel tabulated by MAAP run ID.

MAPP Case	Area and Persons Affected, Framatome BLEU Fuel					
	Decontamination		Interdiction		Condemnation	
	Population	Farm	Population	Farm	Population	Farm
ENMKCTT	2.40E+05	4.71E+04	2.40E+05	6.27E+04	1.44E+04	2.18E+03
MIALF	4.82E+03	7.47E+02	4.82E+03	2.68E+03	2.48E+01	5.20E+00
NIH	2.54E+04	4.17E+03	2.54E+04	9.15E+03	1.47E+02	3.21E+01
NIHNSP	6.05E+03	9.59E+02	6.05E+03	3.59E+03	3.31E+01	6.77E+00
OIA	1.46E+05	2.91E+04	1.46E+05	3.60E+04	1.17E+04	1.84E+03
OIALF	5.97E+02	1.43E+02	5.97E+02	5.61E+02	3.52E-01	2.08E-01
PID	4.97E+02	1.07E+02	4.97E+02	3.77E+02	1.11E+00	3.28E-01
PIDNSP	2.76E+03	4.55E+02	2.76E+03	1.77E+03	9.39E-01	6.80E+00
PIHDEP	1.99E+05	3.87E+04	1.99E+05	5.37E+04	6.07E+03	9.03E+02
PIHDEPV	1.54E+05	3.02E+04	1.54E+05	4.29E+04	5.78E+03	8.96E+02
PIHDHB	2.65E+05	5.07E+04	2.65E+05	6.32E+04	9.36E+03	3.30E+03
PIHDLF	2.22E+05	4.32E+04	2.22E+05	5.58E+04	1.36E+04	2.28E+03
PIHDLV	1.18E+05	2.10E+04	1.18E+05	3.47E+04	1.11E+03	2.28E+02
PIHNDP	1.18E+05	2.10E+04	1.18E+05	3.47E+04	1.11E+03	2.29E+02
PJH	2.29E+03	3.49E+02	2.29E+03	1.04E+03	3.57E+00	1.65E+00
PJHNSP	1.98E+05	3.76E+04	1.98E+05	5.38E+04	1.05E+04	1.68E+03
PLF	5.76E+03	9.06E+02	5.76E+03	3.45E+03	1.21E+01	5.84E+00

Table 11. Mean area (hectares) and number of persons affected by decontaminated, interdicted, and condemned land for Framatome BLEU fuel tabulated by MAAP run ID.

Conclusions:

Latent effects were comparable to earlier studies. The economic effects were somewhat higher than previous studies, but that is because the costs were determined in 2016 dollars, which are inflated over the dollars used in previous studies.

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Attachment A: Selected Critical Input Parameters

This attachment lists the data for some of the key plant-dependent inputs to the MACCS2 calculation. These include the population distribution, the core inventory for each of the three fuel types, and the release fractions and related information for each release category.

The population data used in the analysis was projected to the year 2036, and is shown in Table 1.

Sector	0-1 mile	1-2 miles	2-3 miles	3-4 miles	4-5 miles	5-10 miles	10-20 miles	20-30 miles	30-40 miles	40-50 miles	50 miles total
N	2	18	203	379	501	2,501	2,710	6,269	19,130	8,662	40,375
NNE	0	5	33	379	521	1,931	10,929	3,393	3,965	5,432	26,588
NE	2	10	65	114	278	8,350	21,034	23,783	16,920	17,488	88,044
ENE	6	82	365	289	432	2,273	35,534	69,528	63,014	10,840	182,363
E	11	54	25	13	53	5,170	5,731	136,377	105,268	12,263	264,965
ESE	5	9	208	0	0	86	1,096	4,229	20,885	17,799	44,317
SE	2	0	0	0	2	7,626	40,473	12,373	11,248	36,295	108,019
SSE	0	0	1	0	1	16,037	28,541	26,702	36,087	42,023	149,392
S	0	3	29	59	25	1,768	7,038	4,083	8,813	15,505	37,323
SSW	0	2	12	235	343	3,708	12,873	1,467	2,417	6,519	27,576
SW	0	0	3	90	381	1,523	6,376	3,318	4,075	19,955	35,721
WSW	0	0	70	122	79	168	3,957	3,895	29,617	4,376	42,284
W	0	55	200	15	3	69	3,855	17,460	37,892	4,842	64,391
WNW	0	0	1	4	2	85	3,124	28,974	51,789	11,954	95,933
NW	0	2	8	4	33	640	11,805	9,717	6,912	4,615	33,736
NNW	52	467	272	84	104	3,104	3,232	3,110	24,997	16,467	51,889
TOTAL	80	707	1,495	1,787	2,758	55,039	198,308	354,678	443,029	235,035	1,292,916

Table 1. Population data for the Browns Ferry Nuclear Plant, projected to the year 2036.

The core inventory for each fuel type is shown in Table 2. The GE fuel has a burnup of 35 GWD/MTU, both Framatome fuel types have burnups of 37 GWD/MTU. The release group for each isotope is also shown.

Isotope Number	Isotope Name	Release Group	Activity, Bq		
			GE Uprated	Framatome Commercial	Framatome Blended LEU
1	Cr-51	6	1.733959E+17	1.888302E+17	1.690426E+17
2	Mn-54	6	9.240809E+15	1.419054E+16	1.413400E+16
3	Mn-56	6	3.508059E+17	4.014056E+17	3.618304E+17
4	Fe-55	6	5.283289E+16	6.162424E+16	5.597064E+16
5	Co-58	6	2.133386E+16	2.100312E+16	2.128580E+16
6	Co-60	6	2.124906E+16	1.014821E+16	9.469780E+15
7	As-78	4	2.493803E+16	2.730689E+16	2.725035E+16
8	Ge-78	4	2.430765E+16	2.696767E+16	2.691114E+16
9	Se-81	4	2.229497E+17	2.040950E+17	2.066391E+17
10	Se-81m	4	6.230267E+15	1.452975E+16	1.458629E+16
11	Se-83	4	1.985262E+17	2.326456E+17	2.374512E+17
12	Br-82	2	2.410412E+16	1.215524E+16	1.175949E+16
13	Br-83	2	5.110854E+17	4.946900E+17	5.059972E+17
14	Br-84	2	8.935515E+17	9.215368E+17	9.498048E+17

Table 2. Isotopic data for the Browns Ferry Nuclear Plant, by fuel type.

Isotope Number	Isotope Name	Release Group	Activity, Bq		
			GE Uprated	Framatome Commercial	Framatome Blended LEU
15	Kr-83m	1	5.119335E+17	4.975168E+17	5.116508E+17
16	Kr-85	1	5.356786E+16	5.286116E+16	5.370920E+16
17	Kr-85m	1	1.093124E+18	1.034609E+18	1.071357E+18
18	Kr-87	1	2.108227E+18	2.080525E+18	2.156848E+18
19	Kr-88	1	2.970967E+18	2.883336E+18	2.996408E+18
20	Rb-86	3	9.503702E+15	6.925660E+15	6.840856E+15
21	Rb-88	3	3.016196E+18	2.968140E+18	3.081212E+18
22	Rb-89	3	3.875543E+18	3.872716E+18	4.042324E+18
23	Sr-89	5	3.997417E+18	4.014169E+18	4.155507E+18
24	Sr-90	5	4.271295E+17	4.635952E+17	4.720756E+17
25	Sr-91	5	4.980885E+18	5.031732E+18	5.201340E+18
26	Sr-92	5	5.359613E+18	5.314384E+18	5.483992E+18
27	Y-90	7	4.533537E+17	4.840330E+17	4.896018E+17
28	Y-91	7	5.122977E+18	5.173762E+18	5.343362E+18
29	Y-91m	7	2.891816E+18	2.911604E+18	3.024676E+18
30	Y-92	7	5.384116E+18	5.371140E+18	5.512477E+18
31	Y-93	7	6.185039E+18	4.070594E+18	4.155398E+18
32	Y-94	7	6.207698E+18	6.416896E+18	6.529967E+18
33	Y-95	7	6.642980E+18	6.671248E+18	6.756052E+18
34	Zr-95	7	7.233216E+18	7.205513E+18	7.279010E+18
35	Nb-95	7	7.262049E+18	7.228128E+18	7.304451E+18
36	Nb-95m	7	5.266046E+16	8.002671E+16	8.076168E+16
37	Zr-97	7	7.387842E+18	7.052866E+18	7.041559E+18
38	Nb-97	7	7.444378E+18	7.081134E+18	7.098095E+18
39	Nb-97m	7	7.004245E+18	6.688209E+18	6.705170E+18
40	Mo-99	6	7.588759E+18	7.519596E+18	7.491320E+18
41	Mo-101	6	6.788063E+18	6.756120E+18	6.699582E+18
42	Tc-99m	6	6.628846E+18	6.642980E+18	6.642980E+18
43	Tc-101	6	6.790889E+18	6.756120E+18	6.699582E+18
44	Tc-104	6	4.921459E+18	4.918632E+18	4.692488E+18
45	Ru-103	6	6.049352E+18	6.105888E+18	5.908012E+18
46	Rh-103m	6	5.450070E+18	6.105888E+18	5.908012E+18
47	Ru-105	6	4.008402E+18	4.042324E+18	3.816180E+18
48	Rh-105	6	3.779432E+18	3.816180E+18	3.618304E+18
49	Ru-106	6	2.176919E+18	2.219038E+18	2.060737E+18
50	Rh-106	6	2.336916E+18	2.385819E+18	2.202077E+18
51	Rh-106m	6	7.194206E+16	7.434484E+16	6.247228E+16
52	Rh-107	6	2.245045E+18	2.303842E+18	2.114446E+18
53	Pd-109	6	1.192344E+18	1.325769E+18	1.207044E+18
54	Ag-109m	6	1.191779E+18	1.325769E+18	1.207044E+18
55	Ag-110m	6	1.578485E+16	1.263580E+16	1.057223E+16
56	Ag-111	6	2.589349E+17	2.202077E+17	2.015508E+17
57	Ag-112	6	1.373825E+17	1.011994E+17	9.384976E+16

Table 2, cont. Isotopic data for the Browns Ferry Nuclear Plant, by fuel type.

Isotope Number	Isotope Name	Release Group	Activity, Bq		
			GE Uprated	Framatome Commercial	Framatome Blended LEU
58	Cd-115	6	7.198474E+16	3.109480E+16	2.939872E+16
59	Cd-117	6	4.053691E+16	3.081212E+16	2.939872E+16
60	In-113m	6	5.515087E+15	1.158988E+16	1.125066E+16
61	In-115m	6	7.211167E+16	3.109480E+16	2.939872E+16
62	In-116m	6	3.129323E+16	1.984414E+16	1.851554E+16
63	In-117m	6	4.737773E+16	2.823973E+16	2.688287E+16
64	In-117	6	3.742913E+16	2.304144E+16	2.188243E+16
65	Sn-113	4	5.515087E+15	1.156161E+16	1.125066E+16
66	Sn-121	4	8.791065E+16	5.303077E+16	5.113681E+16
67	Sn-123m	4	6.024632E+16	3.280366E+16	3.138964E+16
68	Sn-127	4	2.649842E+17	1.325769E+17	1.263580E+17
69	Sn-128	4	6.456411E+17	5.512260E+17	5.399188E+17
70	Sb-125	4	7.809883E+16	4.576589E+16	4.418288E+16
71	Sb-131	4	3.341278E+18	3.137748E+18	3.137748E+18
72	Sn-125	4	6.875060E+16	1.970280E+16	1.901023E+16
73	Sb-127	4	4.169530E+17	3.307356E+17	3.166016E+17
74	Sb-129	4	1.261318E+18	1.257926E+18	1.232485E+18
75	Sb-130	4	4.079072E+17	4.183664E+17	4.098860E+17
76	Te-125m	4	1.681805E+16	9.995565E+15	9.647868E+15
77	Te-127	4	4.135640E+17	3.279102E+17	3.137761E+17
78	Te-127m	4	5.549027E+16	5.540528E+16	5.314384E+16
79	Te-129	4	1.241813E+18	1.192910E+18	1.167468E+18
80	Te-129m	4	1.856077E+17	2.408434E+17	2.351898E+17
81	Te-131m	4	5.704482E+17	7.688896E+17	7.462752E+17
82	Te-131	4	3.533500E+18	3.363892E+18	3.335624E+18
83	Te-132	4	5.673388E+18	5.710136E+18	5.653600E+18
84	Te-133	4	4.799906E+18	4.466344E+18	4.494612E+18
85	Te-133m	4	3.033156E+18	3.703108E+18	3.703108E+18
86	Te-134	4	6.883258E+18	7.321412E+18	7.406216E+18
87	I-128	2	5.017583E+16	3.505232E+16	3.250820E+16
88	I-130	2	1.324921E+17	8.084648E+16	7.208340E+16
89	I-131	2	3.980134E+18	3.957520E+18	3.900984E+18
90	I-132	2	5.758192E+18	5.794940E+18	5.766672E+18
91	I-133	2	8.189240E+18	8.254256E+18	8.225988E+18
92	I-134	2	9.011838E+18	9.158832E+18	9.158832E+18
93	I-135	2	7.660628E+18	7.830236E+18	7.801968E+18
94	Xe-131m	1	4.449383E+16	5.286116E+16	5.201312E+16
95	Xe-133	1	8.209027E+18	7.915040E+18	7.886772E+18
96	Xe-133m	1	2.545533E+17	2.586522E+17	2.566734E+17
97	Xe-135	1	2.863548E+18	2.660019E+18	2.939872E+18
98	Xe-135m	1	1.589510E+18	1.693253E+18	1.670639E+18
99	Xe-138	1	6.812588E+18	7.067000E+18	7.095268E+18

Table 2, cont. Isotopic data for the Browns Ferry Nuclear Plant, by fuel type.

Isotope Number	Isotope Name	Release Group	Activity, Bq		
			GE Uprated	Framatome Commercial	Framatome Blended LEU
100	Cs-134	3	8.505841E+17	7.123536E+17	6.586444E+17
101	Cs-134m	3	2.184834E+17	1.537779E+17	1.413400E+17
102	Cs-135m	3	1.007472E+17	1.305982E+17	1.116586E+17
103	Cs-136	3	2.894643E+17	2.374512E+17	2.374512E+17
104	Cs-137	3	5.622505E+17	6.021084E+17	5.992816E+17
105	Cs-138	3	7.536249E+18	7.632360E+18	7.660628E+18
106	Ba-137m	9	5.325691E+17	5.710136E+17	5.681868E+17
107	Ba-139	9	7.352507E+18	7.293144E+18	7.321412E+18
108	Ba-140	9	7.115056E+18	7.321412E+18	7.321412E+18
109	Ba-141	9	6.676902E+18	6.614712E+18	6.642980E+18
110	Ba-142	9	6.348993E+18	6.303764E+18	6.360300E+18
111	La-140	7	7.372294E+18	7.801968E+18	7.801968E+18
112	La-141	7	6.707996E+18	6.671248E+18	6.699516E+18
113	La-142	7	6.495986E+18	6.529908E+18	6.558176E+18
114	La-143	7	6.227440E+18	6.218960E+18	6.303764E+18
115	Ce-141	8	6.764532E+18	6.699516E+18	6.727784E+18
116	Ce-143	8	6.267016E+18	6.275496E+18	6.332032E+18
117	Ce-144	8	5.565969E+18	5.653600E+18	5.681868E+18
118	Pr-142	8	3.106653E+17	2.301015E+17	2.103139E+17
119	Pr-143	7	6.117195E+18	6.077620E+18	6.134156E+18
120	Pr-144	7	5.597064E+18	5.681868E+18	5.710136E+18
121	Pr-144m	7	6.688209E+16	7.915040E+16	7.999844E+16
122	Pr-145	7	4.257161E+18	4.268468E+18	4.296736E+18
123	Pr-147	7	2.673022E+18	2.674153E+18	2.676980E+18
124	Nd-147	7	2.693940E+18	2.693940E+18	2.693940E+18
125	Nd-149	7	1.535518E+18	1.517992E+18	1.498204E+18
126	Nd-151	7	7.765220E+17	7.660628E+17	7.434484E+17
127	Pm-147	7	6.914353E+17	9.469780E+17	9.922068E+17
128	Pm-148	7	1.175666E+18	7.151804E+17	6.784320E+17
129	Pm-148m	7	1.758552E+17	1.438841E+17	1.450148E+17
130	Pm-149	7	2.348505E+18	2.295362E+18	2.219038E+18
131	Pm-150	7	1.885193E+16	1.778057E+16	1.520818E+16
132	Pm-151	7	7.782180E+17	7.745432E+17	7.519288E+17
133	Sm-153	7	1.823569E+18	1.713043E+18	1.597144E+18
134	Sm-155	7	1.447322E+17	1.382310E+17	1.294679E+17
135	Sm-156	7	8.915727E+16	8.593472E+16	7.971576E+16
136	Eu-154	7	4.692347E+16	3.218594E+16	3.162907E+16
137	Eu-155	7	3.293420E+16	1.344002E+16	1.275678E+16
138	Eu-156	7	5.975629E+17	7.840978E+17	6.897957E+17
139	Eu-157	7	7.997017E+16	8.028112E+16	7.123536E+16
140	Eu-158	7	3.386506E+16	3.109480E+16	2.855068E+16
141	Gd-159	7	9.078890E+17	6.689622E+17	6.417401E+17
142	W-187	6	1.594598E+16	1.583008E+16	1.540606E+16

Table 2, cont. Isotopic data for the Browns Ferry Nuclear Plant, by fuel type.

Isotope Number	Isotope Name	Release Group	Activity, Bq		
			GE Uprated	Framatome Commercial	Framatome Blended LEU
143	Pu-238	8	1.485766E+16	1.274887E+16	4.183664E+16
144	Np-239	8	7.756739E+19	7.293144E+19	6.812588E+19
145	Pu-239	8	1.765619E+15	1.763923E+15	1.840247E+15
146	Pu-240	8	2.288295E+15	2.580868E+15	2.448009E+15
147	Pu-241	8	6.637326E+17	6.303764E+17	6.162424E+17
148	Am-241	7	8.127050E+14	8.112916E+14	8.112916E+14
149	Cm-242	7	1.819328E+17	1.840247E+17	1.648024E+17
150	Cm-244	7	8.497361E+15	7.717164E+15	6.049352E+15

Table 2, cont. Isotopic data for the Browns Ferry Nuclear Plant, by fuel type.

Tables 3 through 19 shows the release fractions by isotope group and release phase, the timing of each release phase, and the energy and height of each release phase by MAAP case ID. The data for the risk-dominant phase is shown in bold type. The release event is a large, sudden release if present in that phase. Otherwise, the actual release time of that phase is assumed to be at the halfway point of the phase. Table 20 gives the warning time for each case.

Case ENMKCTT	Release Phase			
Release Fractions	1	2	3	4
Group 1: Kr-Xe	6.510E-1	**3.434E-1**	5.600E-3	0.000E0
Group 2: I	6.294E-4	**1.752E-1**	2.600E-2	4.640E-2
Group 3: Cs	4.982E-4	**1.850E-1**	3.511E-2	4.249E-2
Group 4: Te-Sb	5.092E-7	**2.213E-2**	8.616E-2	6.284E-2
Group 5: Sr	1.272E-6	**7.608E-5**	3.055E-3	4.790E-4
Group 6: Ru	1.322E-4	**1.409E-2**	0.000E0	0.000E0
Group 7: La	6.443E-8	**1.645E-5**	2.872E-4	2.070E-5
Group 8: Ce	2.859E-7	**1.776E-4**	9.501E-4	1.760E-4
Group 9: Ba	2.825E-5	**1.595E-3**	1.244E-3	2.110E-4
Release Time, s	1275.1	**8371.5**	21604.9	64810.6
Release Duration, s	7096.4	**13233.4**	43205.7	64800.0
Release Event, s	2736.0	**8371.5**		
Release Heat, W	0.00E+0	**0.00E+0**	0.00E+0	0.00E+0
Release Height, m	0.0	**0.0**	0.0	0.0

Table 3. Release Fractions for MAAP Case ENMKCTT

Case MIALF	Release Phase			
Release Fractions	1	2	3	4
Group 1: Kr-Xe	**5.281E-1**	1.531E-1	1.125E-1	2.100E-2
Group 2: I	**2.620E-4**	3.540E-5	1.340E-5	1.900E-6
Group 3: Cs	**1.171E-3**	1.578E-4	5.209E-5	6.643E-6
Group 4: Te-Sb	**2.198E-5**	2.008E-6	5.375E-7	6.776E-8
Group 5: Sr	**6.341E-7**	5.540E-8	1.510E-8	2.000E-9
Group 6: Ru	**3.541E-6**	2.970E-7	9.400E-8	1.700E-8
Group 7: La	**2.134E-8**	9.00E-10	1.50E-10	1.00E-11
Group 8: Ce	**4.627E-8**	2.060E-9	2.60E-10	2.00E-11
Group 9: Ba	**4.521E-6**	4.500E-7	3.620E-7	5.350E-7
Release Time, s	**11220.4**	21603.3	43205.1	86406.0
Release Duration, s	**10383.0**	21601.8	43200.9	43194.2
Release Event, s	**11970.0**	25658.6		
Release Heat, W	**0.00E+0**	0.00E+0	0.00E+0	0.00E+0
Release Height, m	**0.0**	0.0	0.0	0.0

Table 4. Release Fractions for MAAP Case MIALF

Case NIH	Release Phase			
Release Fractions	1	2	3	4
Group 1: Kr-Xe	1.642E-2	**5.926E-1**	1.638E-1	1.134E-1
Group 2: I	3.452E-4	**4.736E-3**	6.000E-6	1.540E-4
Group 3: Cs	3.256E-4	**5.208E-3**	2.088E-5	1.800E-4
Group 4: Te-Sb	7.437E-5	**1.530E-3**	1.451E-4	9.559E-4
Group 5: Sr	1.235E-6	**6.917E-5**	2.040E-6	1.000E-8
Group 6: Ru	1.291E-5	**8.600E-6**	1.000E-8	1.900E-7
Group 7: La	1.330E-7	**7.150E-6**	1.760E-7	2.000E-9
Group 8: Ce	5.041E-7	**2.855E-5**	1.830E-6	2.000E-8
Group 9: Ba	3.099E-6	**3.296E-5**	9.400E-7	3.400E-7
Release Time, s	34363.1	**43217.8**	64829.0	86435.0
Release Duration, s	8854.8	**21611.1**	21606.0	43173.0
Release Event, s	34787.8	**43757.8**		
Release Heat, W	0.00E+0	**0.00E+0**	0.00E+0	0.00E+0
Release Height, m	0.0	**0.0**	0.0	0.0

Table 5. Release Fractions for MAAP Case NIH

Case NIHNSP	Release Phase			
Release Fractions	1	2	3	4
Group 1: Kr-Xe	4.607E-2	7.743E-2	7.980E-2	1.028E-1
Group 2: I	1.493E-3	1.880E-4	1.300E-5	1.080E-4
Group 3: Cs	1.279E-3	2.140E-4	2.974E-5	1.285E-4
Group 4: Te-Sb	1.600E-4	2.836E-4	1.978E-4	7.365E-4
Group 5: Sr	2.231E-6	1.771E-5	5.870E-6	5.900E-7
Group 6: Ru	1.827E-5	1.500E-7	2.000E-8	1.300E-7
Group 7: La	1.846E-7	1.918E-6	5.560E-7	5.600E-8
Group 8: Ce	6.979E-7	8.135E-6	4.027E-6	4.200E-7
Group 9: Ba	7.831E-6	7.449E-6	2.560E-6	4.500E-7
Release Time, s	34363.1	43210.4	64825.7	86434.2
Release Duration, s	8847.4	21615.2	21608.5	43184.0
Release Event, s	34787.8			
Release Heat, W	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Release Height, m	0.0	0.0	0.0	0.0

Table 6. Release Fractions for MAAP Case NIHNSP

Case OIA	Release Phase	
Release Fractions	1	2
Group 1: Kr-Xe	9.471E-1	1.000E-4
Group 2: I	1.840E-1	2.550E-2
Group 3: Cs	1.887E-1	2.876E-2
Group 4: Te-Sb	4.224E-2	4.751E-3
Group 5: Sr	5.210E-7	7.650E-8
Group 6: Ru	3.356E-7	1.833E-6
Group 7: La	4.231E-8	1.120E-9
Group 8: Ce	3.792E-7	7.300E-9
Group 9: Ba	2.644E-6	1.930E-7
Release Time, s	96989.5	108022.3
Release Duration, s	11032.8	21580.0
Release Event, s	96989.5	
Release Heat, W	0.00E+0	0.00E+0
Release Height, m	0.0	0.0

Table 7. Release Fractions for MAAP Case OIA

Case OIALF	Release Phase			
Release Fractions	1	2	3	4
Group 1: Kr-Xe	5.743E-3	2.774E-1	**4.665E-1**	1.479E-1
Group 2: I	7.723E-5	3.387E-5	**4.460E-5**	5.600E-5
Group 3: Cs	5.483E-5	4.938E-5	**6.050E-5**	1.192E-4
Group 4: Te-Sb	1.025E-5	3.484E-5	**2.742E-4**	5.478E-5
Group 5: Sr	1.231E-7	1.776E-6	**4.220E-7**	2.500E-8
Group 6: Ru	1.937E-6	1.680E-7	**1.400E-7**	3.000E-8
Group 7: La	1.825E-8	1.676E-7	**3.960E-8**	9.00E-10
Group 8: Ce	1.465E-7	7.975E-7	**3.550E-7**	1.100E-8
Group 9: Ba	3.114E-7	7.736E-7	**2.560E-7**	2.100E-8
Release Time, s	18177.6	21610.6	**43217.9**	86428.9
Release Duration, s	3433.0	21607.3	**43211.0**	43190.4
Release Event, s	18598.5			
Release Heat, W	0.00E+0	0.00E+0	**0.00E+0**	0.00E+0
Release Height, m	0.0	0.0	**0.0**	0.0

Table 8. Release Fractions for MAAP Case OIALF

Case PID	Release Phase		
Release Fractions	1	2	3
Group 1: Kr-Xe	3.570E-2	**4.388E-1**	1.320E-1
Group 2: I	2.054E-5	**1.450E-4**	5.000E-7
Group 3: Cs	2.182E-5	**1.583E-4**	5.930E-7
Group 4: Te-Sb	2.054E-5	**5.241E-4**	9.167E-6
Group 5: Sr	5.744E-7	**1.461E-5**	1.290E-6
Group 6: Ru	9.485E-6	**1.408E-5**	0.000E0
Group 7: La	1.287E-7	**1.646E-6**	1.110E-7
Group 8: Ce	3.629E-7	**6.642E-6**	8.990E-7
Group 9: Ba	2.600E-6	**1.046E-5**	5.100E-7
Release Time, s	78449.2	**86416.5**	108020.2
Release Duration, s	7967.3	**21603.6**	21597.2
Release Event, s	78878.4	**87030.5**	
Release Heat, W	0.00E+0	**0.00E+0**	0.00E+0
Release Height, m	0.0	**0.0**	0.0

Table 9. Release Fractions for MAAP Case PID

Case PIDNSP	Release Phase			
Release Fractions	1	2	3	4
Group 1: Kr-Xe	5.438E-3	**3.253E-1**	2.342E-1	1.048E-1
Group 2: I	1.322E-5	**1.188E-4**	3.030E-5	5.100E-5
Group 3: Cs	1.679E-5	**1.117E-4**	3.988E-5	8.643E-5
Group 4: Te-Sb	3.184E-5	**3.531E-3**	9.549E-4	6.164E-4
Group 5: Sr	8.986E-7	**1.634E-4**	9.140E-5	2.050E-5
Group 6: Ru	4.381E-6	**3.364E-6**	4.900E-7	5.000E-8
Group 7: La	1.664E-7	**1.782E-5**	8.020E-6	1.420E-6
Group 8: Ce	7.880E-7	**5.887E-5**	3.539E-5	1.015E-5
Group 9: Ba	1.186E-6	**6.547E-5**	3.554E-5	8.200E-6
Release Time, s	62069.6	**64831.0**	86433.1	108033.1
Release Duration, s	2761.5	**21602.1**	21600.0	21580.0
Release Event, s	62495.1	**71500.3**		
Release Heat, W	0.00E+0	**0.00E+0**	0.00E+0	0.00E+0
Release Height, m	0.0	**0.0**	0.0	0.0

Table 10. Release Fractions for MAAP Case PIDNSP

Case PIHDEP	Release Phase		
Release Fractions	1	2	3
Group 1: Kr-Xe	**9.467E-1**	2.000E-4	1.000E-4
Group 2: I	**5.450E-2**	2.373E-2	5.867E-2
Group 3: Cs	**4.927E-2**	1.979E-2	5.575E-2
Group 4: Te-Sb	**1.401E-1**	1.935E-2	5.173E-3
Group 5: Sr	**6.315E-4**	7.900E-6	3.000E-7
Group 6: Ru	**3.389E-6**	3.927E-6	6.464E-6
Group 7: La	**4.200E-5**	7.400E-7	3.000E-8
Group 8: Ce	**4.658E-4**	4.700E-6	1.000E-7
Group 9: Ba	**2.687E-4**	1.430E-5	5.540E-5
Release Time, s	**67127.5**	86440.9	108040.9
Release Duration, s	**19313.4**	21600.0	21560.0
Release Event, s	**67127.5**		
Release Heat, W	**0.00E+0**	0.00E+0	0.00E+0
Release Height, m	**0.0**	0.0	0.0

Table 11. Release Fractions for MAAP Case PIHDEP

Case PIHDEPV	Release Phase		
Release Fractions	1	2	3
Group 1: Kr-Xe	**9.453E-1**	3.000E-4	2.000E-4
Group 2: I	**9.975E-2**	1.375E-2	1.070E-2
Group 3: Cs	**8.234E-2**	1.078E-2	2.243E-2
Group 4: Te-Sb	**7.246E-2**	2.943E-2	1.097E-2
Group 5: Sr	**1.772E-5**	8.150E-6	4.600E-7
Group 6: Ru	**1.308E-6**	3.088E-6	5.330E-7
Group 7: La	**1.441E-6**	7.960E-7	4.800E-8
Group 8: Ce	**1.168E-5**	4.600E-6	2.100E-7
Group 9: Ba	**9.528E-6**	4.732E-6	1.040E-6
Release Time, s	**79000.6**	86432.6	108032.6
Release Duration, s	**7432.0**	21600.0	21580.0
Release Event, s	**79000.6**		
Release Heat, W	**0.00E+0**	0.00E+0	0.00E+0
Release Height, m	**0.0**	0.0	0.0

Table 12. Release Fractions for MAAP Case PIHDEPV

Case PIHDHB	Release Phase			
Release Fractions	1	2	3	4
Group 1: Kr-Xe	**9.467E-1**	2.000E-4	1.000E-4	1.000E-4
Group 2: I	**3.051E-2**	3.989E-2	2.616E-2	4.414E-2
Group 3: Cs	**5.478E-2**	3.874E-2	2.326E-2	5.573E-2
Group 4: Te-Sb	**2.427E-1**	3.242E-2	9.753E-2	3.377E-3
Group 5: Sr	**3.589E-2**	2.560E-3	1.000E-5	0.000E0
Group 6: Ru	**3.554E-5**	4.600E-7	9.890E-6	6.040E-6
Group 7: La	**8.160E-3**	3.220E-4	0.000E0	0.000E0
Group 8: Ce	**2.549E-2**	2.700E-3	1.000E-5	0.000E0
Group 9: Ba	**1.476E-2**	1.150E-3	5.000E-5	1.100E-4
Release Time, s	**51487.8**	64824.1	86438.7	108038.7
Release Duration, s	**13336.3**	21614.7	21600.0	21580.0
Release Event, s	**51487.8**			
Release Heat, W	**0.00E+0**	0.00E+0	0.00E+0	0.00E+0
Release Height, m	**0.0**	0.0	0.0	0.0

Table 13. Release Fractions for MAAP Case PIHDHB

Case PIHDLF	Release Phase			
Release Fractions	1	2	3	4
Group 1: Kr-Xe	**9.401E-1**	7.100E-3	4.000E-4	0.000E0
Group 2: I	**1.879E-1**	9.400E-3	4.300E-3	1.900E-3
Group 3: Cs	**2.258E-1**	8.191E-3	9.694E-3	7.852E-3
Group 4: Te-Sb	**1.125E-1**	2.543E-2	8.866E-2	3.882E-2
Group 5: Sr	**1.089E-2**	1.370E-3	2.000E-5	0.000E0
Group 6: Ru	**1.889E-3**	4.000E-6	4.100E-5	5.000E-6
Group 7: La	**1.534E-3**	1.700E-4	2.000E-6	0.000E0
Group 8: Ce	**6.683E-3**	1.512E-3	1.400E-5	1.000E-6
Group 9: Ba	**4.993E-3**	6.140E-4	3.500E-5	9.000E-6
Release Time, s	**44490.1**	64818.1	86430.6	108032.5
Release Duration, s	**20328.0**	21612.5	21601.9	21580.0
Release Event, s	**45160.4**			
Release Heat, W	**0.00E+0**	0.00E+0	0.00E+0	0.00E+0
Release Height, m	**0.0**	0.0	0.0	0.0

Table 14. Release Fractions for MAAP Case PIHDLF

Case PIHDLV	Release Phase			
Release Fractions	1	2	3	4
Group 1: Kr-Xe	5.764E-1	**3.391E-1**	2.570E-2	4.900E-3
Group 2: I	7.857E-3	**1.856E-2**	1.500E-4	5.680E-3
Group 3: Cs	5.919E-3	**1.835E-2**	4.848E-4	9.298E-3
Group 4: Te-Sb	1.374E-3	**1.289E-2**	3.437E-3	4.494E-2
Group 5: Sr	3.039E-5	**9.796E-4**	1.130E-4	3.000E-6
Group 6: Ru	9.805E-5	**1.295E-5**	2.400E-6	5.000E-7
Group 7: La	2.825E-6	**1.170E-4**	1.100E-5	4.000E-7
Group 8: Ce	7.652E-6	**4.787E-4**	1.091E-4	2.400E-6
Group 9: Ba	5.580E-5	**4.314E-4**	5.440E-5	1.800E-6
Release Time, s	39529.3	**43216.0**	64823.1	86430.2
Release Duration, s	3686.7	**21607.1**	21607.1	43185.1
Release Event, s	39964.2			
Release Heat, W	0.00E+0	**0.00E+0**	0.00E+0	0.00E+0
Release Height, m	0.0	**0.0**	0.0	0.0

Table 15. Release Fractions for MAAP Case PIHDLV

Case PIHNDP	Release Phase			
Release Fractions	1	2	3	4
Group 1: Kr-Xe	5.764E-1	**3.391E-1**	2.570E-2	4.900E-3
Group 2: I	7.857E-3	**1.856E-2**	1.500E-4	5.680E-3
Group 3: Cs	5.919E-3	**1.835E-2**	4.848E-4	9.298E-3
Group 4: Te-Sb	1.374E-3	**1.289E-2**	3.437E-3	4.494E-2
Group 5: Sr	3.039E-5	**9.796E-4**	1.130E-4	3.000E-6
Group 6: Ru	9.805E-5	**1.295E-5**	2.400E-6	5.000E-7
Group 7: La	2.825E-6	**1.170E-4**	1.100E-5	4.000E-7
Group 8: Ce	7.652E-6	**4.787E-4**	1.091E-4	2.400E-6
Group 9: Ba	5.580E-5	**4.314E-4**	5.440E-5	1.800E-6
Release Time, s	37392.5	**43227.3**	64839.4	86453.4
Release Duration, s	5834.7	**21612.2**	21614.0	43160.0
Release Event, s	39914.7			
Release Heat, W	0.00E+0	**0.00E+0**	0.00E+0	0.00E+0
Release Height, m	0.0	**0.0**	0.0	0.0

Table 16. Release Fractions for MAAP Case PIHNDP

Case PJH	Release Phase			
Release Fractions	1	2	3	4
Group 1: Kr-Xe	**1.156E-1**	2.551E-1	2.621E-1	9.590E-2
Group 2: I	**7.126E-5**	1.384E-5	2.130E-5	3.996E-4
Group 3: Cs	**6.364E-5**	1.324E-5	2.961E-5	4.806E-4
Group 4: Te-Sb	**1.618E-5**	9.952E-6	9.661E-5	2.555E-4
Group 5: Sr	**9.112E-7**	3.228E-7	5.700E-8	1.900E-8
Group 6: Ru	**4.807E-7**	1.800E-9	2.700E-9	2.00E-10
Group 7: La	**1.005E-7**	3.490E-8	5.400E-9	1.100E-9
Group 8: Ce	**3.381E-7**	1.994E-7	2.920E-8	8.300E-9
Group 9: Ba	**5.531E-7**	1.465E-7	2.610E-8	1.090E-8
Release Time, s	**5703.7**	21619.1	43226.4	86440.0
Release Duration, s	**15915.4**	21607.3	43213.6	43178.1
Release Event, s	**6127.5**		73860.0	
Release Heat, W	**0.00E+0**	0.00E+0	0.00E+0	0.00E+0
Release Height, m	**0.0**	0.0	0.0	0.0

Table 17. Release Fractions for MAAP Case PJH

Case PJHNSP	Release Phase			
Release Fractions	1	2	3	4
Group 1: Kr-Xe	3.264E-2	**5.030E-1**	2.862E-1	5.670E-2
Group 2: I	6.979E-3	**1.760E-1**	1.240E-2	7.200E-3
Group 3: Cs	6.979E-3	**1.754E-1**	1.417E-2	9.990E-3
Group 4: Te-Sb	2.816E-4	**1.526E-2**	1.969E-2	7.074E-2
Group 5: Sr	3.603E-6	**4.186E-4**	3.258E-4	6.700E-6
Group 6: Ru	1.216E-5	**9.610E-4**	4.380E-5	5.000E-6
Group 7: La	4.365E-8	**3.977E-5**	3.546E-5	6.600E-7
Group 8: Ce	7.230E-8	**1.188E-4**	1.535E-4	4.100E-6
Group 9: Ba	2.945E-5	**8.570E-4**	1.706E-4	4.000E-6
Release Time, s	1303.2	**4928.4**	21608.6	64808.6
Release Duration, s	3625.2	**16680.1**	43200.0	64800.0
Release Event, s		**4928.4**		
Release Heat, W	0.00E+0	**0.00E+0**	0.00E+0	0.00E+0
Release Height, m	0.0	**0.0**	0.0	0.0

Table 18. Release Fractions For MAAP Case PJHNSP

Case PLF	Release Phase			
Release Fractions	1	2	3	4
Group 1: Kr-Xe	5.468E-2	**5.662E-1**	1.421E-1	1.187E-1
Group 2: I	1.346E-4	**4.596E-4**	1.780E-5	2.610E-4
Group 3: Cs	1.503E-4	**7.236E-4**	4.552E-5	2.800E-4
Group 4: Te-Sb	1.546E-5	**4.222E-3**	1.088E-4	9.108E-4
Group 5: Sr	5.850E-7	**1.564E-4**	1.200E-6	0.000E0
Group 6: Ru	6.285E-6	**1.174E-5**	1.000E-8	1.040E-6
Group 7: La	8.312E-8	**1.469E-5**	1.000E-7	0.000E0
Group 8: Ce	5.875E-7	**6.020E-5**	1.110E-6	1.000E-8
Group 9: Ba	1.723E-6	**6.580E-5**	7.600E-7	6.000E-7
Release Time, s	34389.1	**43230.7**	64848.9	86468.3
Release Duration, s	8841.5	**21618.3**	21619.4	43145.5
Release Event, s	34816.8	**43390.7**		
Release Heat, W	0.00E+0	**0.00E+0**	0.00E+0	0.00E+0
Release Height, m	0.0	**0.0**	0.0	0.0

Table 19. Release Fractions for MAAP Case PLF

MAAP Case	Warning Time, s
ENMKCTT	600.0
MIALF	2627.7
NIH	600.0
NIHNSP	600.0
OIA	994.3
OIALF	994.3
PID	600.0
PIDNSP	600.0
PIHDEP	14400.0
PIHDEPV	14400.0
PIHDHB	14400.0
PIHDLF	14400.0
PIHDLV	14400.0
PIHNDP	14400.0
PJH	600.0
PJHNSP	600.0
PLF	14251.5

Table 20. Warning Times by MAAP Case

Chapter Nine
Consequence Analysis

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9.0 Reactor Accident Consequence Analysis

9.1 Introduction

In a probabilistic risk assessment of a nuclear power plant, the ultimate risk depends on the effects of the potential reactor accidents on the surrounding population and environment. The purpose of the reactor accident consequence analysis is to determine the potential health effects to surrounding population and economic impacts around the site resulting from the potential reactor accidents. For a particular nuclear plant site, the consequences depend on local meteorological conditions, populatio distribution and nature of land usage as well as on the magnitude and characteristics of the radioactive release during reactor accidents. This chapter describes the basic elements of the consequence analysis, site-specific information around Browns Ferry Nuclear Power Plant, and results of the consequence analysis. Also described in this chapter are the selected sensitivity studies on some of the major parameters in the consequence analysis. The detailed descriptions of each case study are presented in Appendix G of this study.

Figure 9.1-1 shows the schematic diagram of the consequence analysis model. Each of the major hypothetical accidents identified in this study was assigned to one of several release categories based on the primary system and containment responses to the accident conditions. Each release category has associated release fractions of the initial core radionuclide inventory, which are used as input data to the consequence analysis model. Assuming that an accident occurs at a given time, there are various factors which would influence the accident consequences, but the most important factors are associated with local meteorological conditions that exist at the time of accident. The meteorological data is the primary factor which dominates the transport and dispersion of the release radioactive plume. The meteorological data includes wind direction, wind speed, atmospheric thermal stability, and rainfall intensity. These are also used as input data to the consequence analysis model. The atmospheri dispersion model used in this study is a standard Gaussian dispersion model that has been modified to include the effects of radioactive decay, thermal stability, wind speed, and precipitation as a function of time after the accident. Along with the atmospheric dispersion model, the dry and wet deposition processes are modeled to determine the air contaminatio and ground contamination along the plume pathway. Then the potential radiation dose accumulation is computed from cloudshine, groundshine, inhalation of radioactive materials, and ingestion of contaminated food and milk. The evacuation schemes and population distribution are used to determine the health effects such as early fatalities, latent cancer fatalities, and thyroid effects.

The principal model used to assess the accident consequence is a revised version of CRAC computer code developed by NRC for the RSS [Reference 1]. The CRAC code was originally intended for use in computing the overall consequence from a number of nuclear power plants in different regions throughout the United States. Since the site-specific consequences from accidents at the Browns Ferry Nuclear Power Plant are desired in this study, it was necessary to choose a computer program which can treat site-specific conditions adequately and realistically.

Sandia National Laboratories has developed the CRAC2 computer code [Reference 2], which is a revised version of CRAC with the necessary changes for site-specific condition treatment, corrections of known errors, and additional changes for code improvement. The additional changes include modification of the atmospheric dispersion model and introduction of a new meteorological sampling technique, a new evacuation model, new output capabilities, and a new thyroid damage model. The CRAC2 computer code has the same organization, structure, and analytical capabilities of CRAC of the RSS.

CRAC2 presents the results of the consequence analysis in the form of complementary cumulative distribution functions (CCDFs). These distributions relate the probabilities and magnitudes for various consequences such as early fatalities. In chapter 9, the probabilities in a CCDF are presented as conditional probabilities. The conditional probability used in the context of this chapter is defined as the probability that a consequence of a certain magnitude will occur given that in-plant events leading to the particular ex-plant release under study has occurred. These CCDFs will then be utilized to generate the overall risk curves when the plant systems and containment failure probabilities are incorporated.

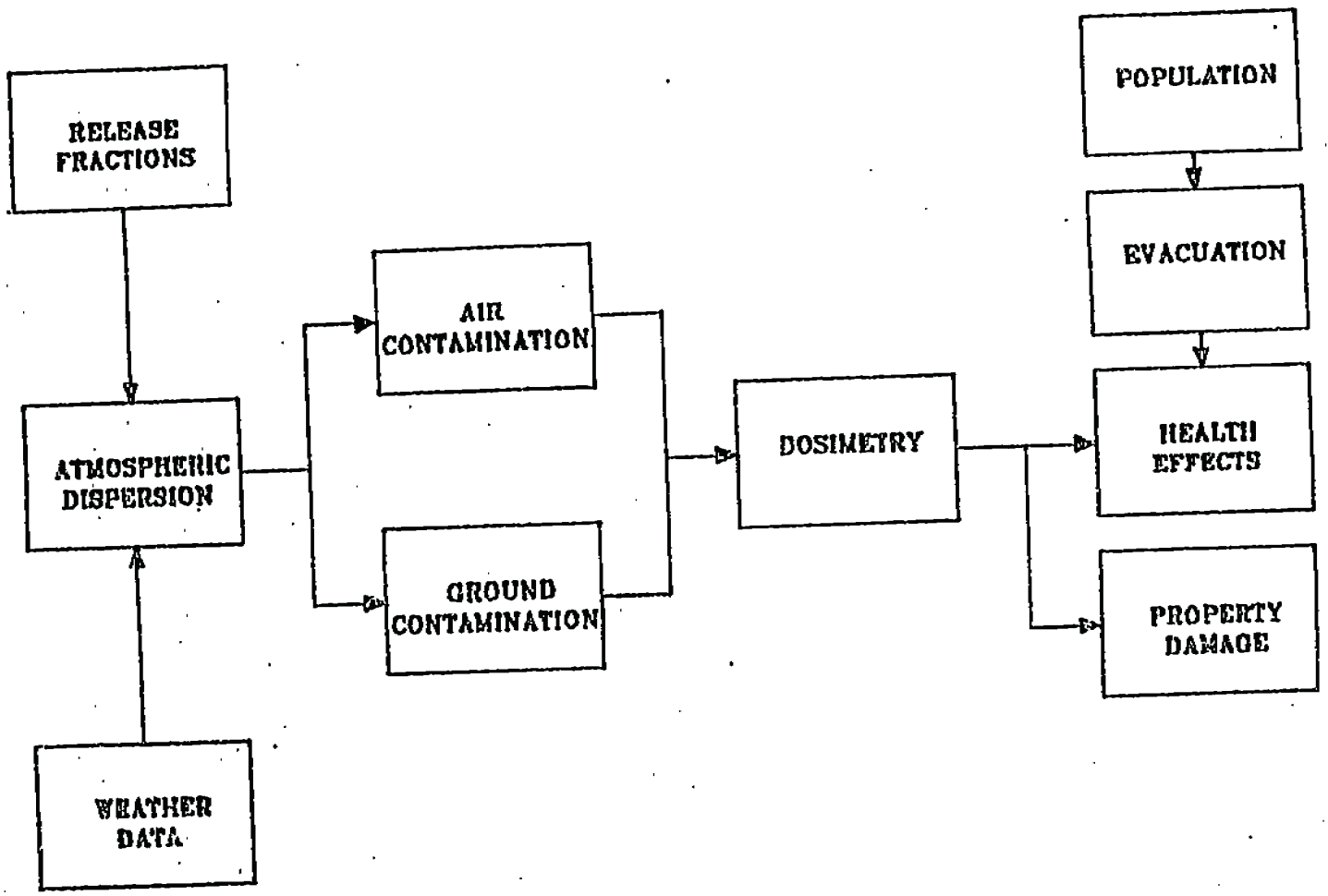


FIGURE 9.1–1 SCHEMATIC OUTLINE OF CONSEQUENCE MODEL

9.2 Elements of Consequence Analysis

A series of mathematical and statistical models is coupled in CRAC2 to assess the accident consequences. These models along with other elements of consequence analysis are described in this section. The basic elements of the consequence analysis are:

1. the released radioactive material into the atmosphere,
2. meteorological data sampling methods,
3. atmospheric transport and dispersion of the radioactive plume,
4. radioactive material deposition processes,
5. radiation exposure pathways and dosimetry,
6. protective measures to reduce radiation doses,
7. effects of radiation does on the human body, and
8. economic impacts due to the potential reactor accident.

Each of these elements will be discussed in detail in the following subsections. Since this study used CRAC2 [Reference 2], which is a revised version of CRAC of the RSS, the materials presented here are mostly drawn from Appendix VI of the RSS [Reference 1] and CRAC2 Model Description [Reference 3].

9.2.1 Released Radioactive Materials

In order to define the various releases which might occur at BFN, several release categories were identified. Each release category has an associated probability of occurrence and a magnitude of radioactive material release. The magnitude of radioactive material release is given in terms of the fraction of the initial core radioactive inventory. The core inventory was calculated using the ORIGEN2 computer code [Reference 4] using BFN Unit 1 cycle 6 fuel load data. The reactor core radioactivity inventory calculations will be discussed in Section 9.3.5 in more det.

In addition to the probability and release magnitude, the parameters that characterize the various releases due to hypothetical accident sequences are time of release, duration of release, warning time for evaluation, height of release, and energy content of the released radioactive plume.

The time of release refers to the time interval between the start of the hypothetical accident and the release of radioactive material from the containment building to the atmosphere; it is used to calculate the initial decay of radioactivity. The duration of release is the total time during which radioactive material is emitted into the atmosphere; it is used to account for continuous releases by adjusting for horizontal dispersion due to wind meander. These parameters, time and duration of release, represent the temporal behavior of the release in the dispersion model. They are used to model a "single-puff" release from the calculations of release versus time, presented in Appendix G of this study.

The warning time for evacuation (see Appendix G) is the interval between awareness of impending core melt and the release of radioactive material from the containment building. Finally, the height of release and the energy content of the released plume affect the manner in which the plume would be dispersed in the atmosphere. Since most of these parameters are site- and plant-specific for BFN and case dependent, the parameters will be defined in Appendix G.

9.2.2 Meteorological Data Sampling Method

The atmospheric dispersion of radioactive material from a postulated accident depends on the meteorological conditions from the start of the accident through a period of tens to hundreds of hours following the accident. The characteristic of the accident together with the weather coincident with and immediately following the accident determines the transport and dispersion process that follows, and thus, the magnitude of the consequences that will result. Since the weather that could occur coincident with the accident is diverse, representative meteorological data sequences are selected as input to the dispersion model to reflect the dependence of the transport and dispersion process on the site weather. The selection process is done by means of sampling techniques from a full year of hourly weather data characteristic of the plant site. The CRAC2 model allows a choice between four sampling techniques: (1) random sampling; (2) stratified random sampling; (3) stratified sampling, and (4) importance sampling. Whatever sampling technique is chosen the goal is to realistically represent the distribution of dispersion model results as a function of site characteristic weather.

The first three of these sampling methods were included in the original CRAC model. A description of these three methods can be found in Section 13 of Appendix VI of the RSS.

The sampling method recommended for use in CRAC, and used in most CRAC applications, is the stratified sampling method. The stratified sampling method ensures a complete coverage of diurnal, seasonal, and four-day cycles without the statistical noise of methods that utilize random sampling. However, sensitivity studies performed using CRAC indicate considerable variability in predicted results attributable to sampling by this method [Reference 5]. The importance sampling method available in CRAC2 greatly reduces the variability due to sampling observed with any of these three other techniques.

The basis of the importance sampling method is an initial assessment of the full set of hourly weather data. This initial assessment provides information about the types of weather sequences contained in the data and the frequency of these weather types. With this information, weather sequences can be sampled to reflect the full year's weather data. This ensures representation of each type of weather sequence, those important to realistic representation of the weather data set, and those important to the occurrence of the most serious accident consequences.

The meteorological data assessment is done by sorting it into weather categories, categories that provide a realistic representation of the year's weather without overlooking those kinds of weather that are instrumental in producing major consequence impacts. A set of 29 weather categories has been selected for the CRAC2 model to reflect these requirements.

Given a postulated large accident, large numbers of early fatalities and injuries are normally associated with relatively low probability weather events such as rainfall or wind speed slowdowns within 30 miles of the plant site or with stable weather and moderate wind speeds at the start of the release. In CRAC2 these weather data types have been selected to be among the 29 categories utilized in the assessment proces

The 29 categories are described in Table 9.2-1. An example of weather data sorted into these categories is shown in Table 9.2-2. The weather data for this example represent one year of meteorological data for the Browns Ferry Nuclear Plant site. The entire year of data, 8760 hourly recordings, are sorted into the 29 weather categories. Each sequence is examined to determine (1) the first occurrence of rain within 30 miles of the site, or (2) the first occurrence of a wind speed slowdown within 30 miles of the accident site, or (3) the stability category and wind speed at the start of the sequence. The first of these conditions that is satisfied by the sequence determines the weather category to which it is assigned. Following the assessment process, the start hour of each weather sequence will have been assigned to one and only one weather category. Each of the weather categories then includes a set of weather sequences representing the corresponding weather type. The probability of occurrence of that weather type is the ratio of the number of weather sequences in the category to the total number of sequences in the year's weather data set.

The sampling procedure now has two key items of information available to it: (1) the category of each weather sequence and (2) the probabilit of occurrence of each category of weather. A sample consists of a set of weather sequences selected from each of the categories. Normally, four sequences are selected from each category by the "Latin hypercube" sampling scheme [Reference 6]. With this sampling method, random samples are drawn from sets evenly spaced within the weather category. This assures that the model uses an even representation of the weather data over the full year. Assume that a weather category contains N_i weather sequences and that K_i of the sequences are to be selected as samples, $0<K_i \leq N_i$. The N_i weather sequences are then grouped into K_i evenly spaced sets, $S_1 \ldots S_{K_i}$.

Set S_j contains

$$\left[j \left(\frac{N_i}{K_i} \right) \right] - \left[(j-1) \left(\frac{N_i}{K_i} \right) \right]$$

weather sequences**. One weather sequence is then randomly selected from each set. Since the total number of weather sequences selected from category i would be K_i, the total number of sequences selected from all 29 of the categories would be

$$\sum_{i=1}^{29} K_i$$

The assigned probability for a meteorological sequence sampled from category i would be

$$\frac{N_i/K_i}{\sum_{i=1}^{29} N_i}$$

Consider a simple example. Let category i contain 10 weather sequences from which four are to be sampled. Then $N_i = 10$, $K_i = 4$, and S_1 contain two sequences, S_2 contains three sequences, S_3 contains two sequences, and S_4 contains three sequences. One sequence is randomly drawn from each set S_j, j = 1, ...4.

---

*The notation

$$\left[j \left(\frac{N_i}{K_i} \right) \right]$$

means the largest integer contained in the number $j \left(\frac{N_i}{K_i} \right)$.

**Since the N_i weather sequences of category i have a natural order determined by the initial time of each of the weather sequences, the evenly spaced sets S_1, ... S_{K_i} are ordered; i.e., S_1 consists of the first $[N_i/K_i]$ elements of category i, S_2 consists of the next $\{[2(N_i/K_i)] - [N_i/K_i]\}$ elements of category i, and so on.

The assigned probability for a sequence chosen from this category would be $\frac{10/4}{8760}$ since CRAC2 requires the year's weather data to contain 8760 sequences.

The technique of importance sampling described here selects weather sequences that accurately represent the range of weather sequences in the weather data and their probability of occurrence, and assures selection of sequences that yield severe consequences. The inclusion of these severe accident consequences and of weather sequence probabilities representing each category is key in the realistic representation of the probability distribution function of consequences. The technique is simple and does not require significant additional computation time compared to other sampling methods. Therefore, this importance sampling method will be used exclusively for this study.

9.2.3 Atmospheric Transport and Dispersion

The atmospheric transport and dispersion model used in CRAC2 is similar to that used in CRAC.

The transport and dispersion model is based on a standard Gaussian-plume formulation [Reference 7]. Assuming the radioactive material is reflecte at the ground, the ground-level, time-integrated concentration for a source of strength Q is given by

$$\chi(x,y,0) = \frac{Q}{\pi\sigma_y(x)\sigma_z(x)\bar{u}} \exp\left(\frac{-y^2}{2\sigma_y^2(x)} + \frac{-h^2}{2\sigma_z^2(x)}\right) \qquad (9.2\text{-}1)$$

where $\sigma_y(x)$ and $\sigma_z(x)$, the standard deviations of the crosswind and vertical distributions, respectively, are functions of the downwind distance, x, $\bar{u}$ is the mean wind speed, and h is the source release height. If Q is in curies, the units of χ are Ci-sec/m^3. In CRAC2, equation (9.2-1) is simplified by replacing the Gaussian crosswind profile (y direction) with a rectangular (or "top hat") function of width 3 σ_y; i.e., in equation (9.2-1) the term

$$\frac{1}{\sqrt{2\pi}\,\sigma_y(x)} \exp\left(\frac{-y^2}{2\sigma_y^2(x)}\right) \qquad (9.2\text{-}2)$$

is replaced by $1/(3\sigma_y(x))$. With this substitution, equation (1) becomes

$$\chi(x,o) = \frac{Q}{\frac{3}{2}\sqrt{2\pi}\,\sigma_y(x)\sigma_z(x)\bar{u}} \exp\left(\frac{-h^2}{2\sigma_z^2(x)}\right)$$

The top-hat function which replaces the Gaussian crosswind profile is shown in Figure 9.2-1. The amplitude of the top hat is 0.836 of the Gaussian peak; however, the area under the top hat curve is identical to the area under the Gaussian crosswind profile.

For each start-hour selected by the meteorological sampling technique, the CRAC2 dispersion model uses the subsequent meteorological conditions to predict the dispersion and transport of the released plume of radioactive material. The sequence of hourly recordings is used to account for changing meteorological conditions; i.e., wind speed, atmospheric thermal stability, and rain intensity may change during plume passage. The wind direction; however, is assumed to be invariant during and following the release.

Based on the windspeed in each hour, the stability, windspeed, and accumulated rainfall are assigned to all spatial intervals which the plume passes during the hour. If the windspeed for an hour is not sufficient for the plume to fully traverse an interval, the windspeed, stability, and accumulated precipitation are averaged for all hours the plume is within that interval (the average of A and C stability is B, of A and B is B).

Values of $\sigma_y(x)$ and $\sigma_z(x)$ are calculated for each spatial interval using Pasquill-Gifford curves as provided in Turner [Reference 7]. The empirical, best-fit functions for the curves given by Martin and Tikvart [Reference 8] are used. Successive growth rates of $\sigma_y(x)$ and $\sigma_z(x)$ for each spatial interval are estimated from the value in the previous spatial interval by calculating the virtual-source distance at the current stability class necessary to give that value, and extrapolating growth to the end of the current spatial interval. A modification of the vertical dispersion parameters (σ_z) for surface roughness was incorporated in CRAC2. The Pasquill-Gifford curves are appropriate for a surface roughness of about 3 cm (short grass). However, a more typical value for the United States is 10 cm (crops, bushes, etc.). The parameterization of σ_z incorporated in CRAC2 includes the following surface roughness correction recommended by an AMS workshop [Reference 9].

$$\sigma_{z_{CRAC2}} = \sigma_{z_{P-G}} \left(\frac{10\ \text{cm}}{3\ \text{cm}}\right)^{0.2}$$

The radioactive decay of each isotope during downwind transport, including build-up of any daughter products, is evaluated using standard formualae, e.g.,

$$Q(x) = Q \exp\left(-\lambda x/\bar{u}\right) \qquad (9.2\text{-}3)$$

where λ is the radioactive decay constant.

In CRAC2 the equation (9.2-3) is further modified to account for the effects of release duration, mixing layer depth, building wake, plume rise due to sensible heat buoyancy, and dry and wet removal processes.

The dry and wet removal processes are described in next section. The descriptions of other effects can be found in CRAC2 Model Description [Reference 3].

9.2.4 Dry and Wet Deposition Processes

As the radioactive plume travels outward from the reactor, various mechanisms remove the airborne radioactivity. In addition to radioactive decay, the radioactive material is removed by such deposition processes as impaction on obstacles (dry deposition) and by precipitation scavenging (wet deposition).

These deposition mechanism cannot be modeled precisely. There are significant dependencies of deposition rates on the type and rate of precipitation, particle density and size distribution, the surface characteristic of the ground, and weather conditions.

For simplicity, deposition of each isotope by dry and wet removal is calculated by the source depletion method [Reference 10]. The rate that material is deposited on the ground by dry deposition is given by

$$\text{Flux to Ground } (\text{Ci/m}^2\text{-sec}) = \begin{pmatrix}\text{Air Concentration} \\ (\text{Ci/m}^3)\end{pmatrix} \left(v_d(\text{m/sec})\right)$$

where v_d is the deposition velocity.

In CRAC2, the fraction of each isotope removed in a spatial interval by dry deposition is approximated by

$$f_d = \frac{v_d t_i}{h_{eff}}$$

where v_d is the deposition velocity of the isotope, t_i is the time required for the plume front to traverse the interval, and h_{eff} is the effective plume height:

$$h_{eff} \quad \frac{1}{x(o)} \int_o^\infty x(z)dz = \left(\frac{8}{2}\right)^{1/2} \sigma_z(x) \exp\left(\frac{h^2}{2\sigma_z{}^2(x)}\right)$$

CRAC2 incorporates an improved model of wet deposition (washout) which is dependent on rainfall intensity. The fraction of each isotope remove by wet removal (washout) is given by

$$f_w = 1 - \exp(-\Lambda\, t_i).$$

Λ is the washout coefficient and is defined to be

$$\Lambda = C \cdot R$$

where R is the amount of observed rain in the spatial interval (mm) and C is 10^{-3} (1/mm-sec) for unstable and neutral conditions and 10^{-4} (1/mm-sec) for stable conditions. Alternatively, the original CRAC model which uses a single rain rate (0.5 mm/hr) may be used. Both V_d and Λ are assumed to be zero for noble gases, and therefore are not removed by either dry or wet deposition. The dry and wet deposition coefficients are given in Table 9.2-3.

The ground concentration is calculated from the air concentration and the deposition rate. The radioactive material deposited on the ground is subtracted from the airborne radioactive material.

9.2.5 Radiation Exposure Pathways and Dosimetry

The calculation of radiation exposure in CRAC2 is divided into two categories: early exposure which occurs during and shortly after radioactive plume passage, and chronic exposure which occurs over a longer time period. These two categories of exposure are discussed separately.

9.2.5.1 Early Exposure

The calculation of radiation doses due to early exposure considers three pathways: (1) cloudshine, (2) groundshine and (3) inhalation. The time periods used to calculate the early exposure doses are discussed in Section 9.2 of Appendix VI of the RSS.

(1) Cloudshine

Estimation of doses due to external exposure to the passing radioactive cloud (or plume) incorporate a "semi-infinite cloud" approximation (Section 8.2 of RSS). The cloudshine dose due to immersion in a semi-infinite cloud, E_c [rem], is

$$E_c = A_c \cdot D_{c,i} \cdot SF_c \cdot \frac{D_c}{D_{c,i}}$$

where

A_c = time-integrated air concentration [Ci - sec/m^3],

$D_{c,i}$ = the semi-infinite cloud dose conversion factor for each organ and nuclide [rem/Ci - Sec/m^3]

SF_c = the appropriate shielding factor for cloudshine

$D_c/D_{c,i}$ = correction factor from semi-infinite cloud doses to finite cloud doses.

The correction factors are given in Table 9.2-4, and the dose conversion factors for cloudshine are given in Table 9.2-5.

(2) Groundshine

Groundshine doses, E_g [rem], due to exposure to radioactive material deposited on the ground by both dry and wet depositions are

$$E_g = G_c \cdot D_g \cdot SF_g$$

where

G_c = initial level of ground contamination for each nuclide [Ci/m^2]

D_g = dose conversion factor [$rem/Ci/m^2$]

SF_g = appropriate shielding factor for groundshine

Groundshine doses are computed for 8 hours and seven days exposure periods. For exposure periods between 8 hours and seven days, doses are determined by interpolating between these two values. For exposure periods shorter than 8 hours, doses are computed by extrapolation of the 8-hour dose. The integrated dose conversion factors for exposure periods of 8 hours and seven days are given in Table 9.2-6 and 9.2-7, respectively.

(3) Inhalation

The internal radiation dose due to inhalation of radionuclides from the passing cloud is calculated at various time periods following exposure. For each time period, the doses are calculated using the integrated air concentration of each nuclide adjusted for the exposure duration. The dose from inhaled radionuclides, E_i [rem], is

$$E_i = A_c \cdot B_r \cdot D_i$$

where

A_c = integrated air concentration [$Ci\text{-}Sec/m^3$]

B_r = assumed breathing rate [m^3/sec]

D_i = dose conversion factor for each organ [rem/Ci].

The dose conversion factors for inhalation acute exposures used in CRAC2 are given in Table 9.2-8.

9.2.5.2 Chronic Exposure

The calculation of doses due to chronic exposure considers four pathways: (1) long-term groundshine, (2) inhalation of resuspended radionuclides, (3) ingestion of radionuclides from directly contaminated crops, and (4) ingestion of radionuclides via root uptake. The nuclides that are considered in each of these pathways are shown in Table 9.2-9.

(1) Long-term Groundshine

The bases for the long-term groundshine model used in the CRAC2 chronic exposure model are discussed in detail in Appendix VI of the RSS. Before calculating doses to an individual, the model first determines whether protective actions should be taken, such as land decontamination or prohibiting land use (land interdiction). The CRAC2 code does this by comparing the long-term groundshine dose to a dose criterion (i.e., a dose level that would require protective actions). For CRAC2, the dose criterion is assumed to be 25 rem in 30 years to the whole body. When calculating population doses in a given area, the model assumes a constant population with respect to time.

(2) Inhalation of Resuspended Radionuclides

The doses resulting from inhalation of resuspended radionuclides from contaminated ground are calculated for time intervals after the land interdiction period. Resuspension doses are not calculated if the land is permanently interdicted. Nine radionuclides are considered in this exposure pathway as shown in Table 9.2-9. The land decontamination factors, if there is any, used for the dose calculation are those used for the long-term groundshine calculations. A detailed discussion of the resuspension pathway model is contained in Appendix VI of the RSS.

(3) Ingestion of Radionuclides from Directly Contaminated Crops

This pathway is considered only for the year following the occurrence of an accident and results from deposition of radioactivity on crop surfaces. Ingestion of iodine, Sr and Cs is considered for milk and ingestion of Sr and Cs is considered for crops other than milk. Appendix VI of the RSS contains a detailed discussion of how ingestion exposure is related to ground concentrations.

This exposure pathway is excluded if any actions such as land interdiction or land decontamination are taken. Land decontamination assumes removal and destruction of contaminated crops. This pathway is also excluded if doses to a critical individual as a result of the pathway exceed predetermined dose limits. CRAC2 uses dose limits for each of the elements considered for both consumption of milk and consumption of "other" crops ("other" crops are assumed to be crops other than milk). The criteria used for milk are for doses to children

and include: (1) 3.3 rem to the bone marrow in the first year for Sr: 3.3 rem to the whole body for Cs; and 10 rem to the thyroid for iodine. The levels used for other crops are for any member of the population and include: 2.0 rem to the bone marrow in the first year for Sr and 2.0 rem to the whole body for Cs. Based on the dose criteria, consumption of milk and/or consumption of "other" crops produced in the area may be prohibited. If radioactivity levels in the area are sufficiently low (i.e., if doses received by an individual who is assumed to consume nothing but food produced in the area do not exceed the criteria immediately following the accident), the CRAC2 code assumes consumption of milk or "other" crops continues uninterrupted. If the initial activity is too high, the code determines whether or not radionuclide decay and weathering can reduce the contamination to the acceptable level. If these waiting periods do not result in sufficient reduction of potential doses, then the food pathway being considered (i.e., milk or "other" crops) is assumed to be destroyed. The waiting periods considered are 60 to 30 days for "other" crops, depending on the time in the growing season, and anywhere from 0 to 90 days for milk consumption.

(4) Ingestion of Radionuclides Via Root Uptake

The CRAC2 model also calculates doses resulting from ingestion of foods contaminated via root uptake. The code calculates these doses for both milk consumption and "other" crop pathways. The radionuclides that are treated include Sr-89, Sr-90, Cs-134, and Cs-137. This exposure pathway is ignored if the area is assumed to be permanently interdicted. Otherwise, exposures are determined from time equal to 0.0 or 1.0 year; when the decontamination factor, which was determined during the long-term groundshine calculations, is greater than 1.0, and then doses are determined from 1.0 year. A detailed disucssion of the root uptake model is included in Appendix VI of the RSS.

9.2.6 Evacuation and Other Protective Measures

Evacuation and other protective measures (i.e., sheltering and relocation) are the expeditious movements of people to avoid or reduce immediate exposure to the passing radioactive plume and ground contamination. The CRAC2 model of these protective measures was extensively revised from CRAC of the RSS. The CRAC2 model allows up to six different evaluation scenarios with their respective probability of occurrence. Each protective measure is described in detail in the following subsections.

9.2.6.1 Evacuation

Evacuation is potentially the most effective method of avoiding radiation exposure and can provide essentially total protection if completed prior to arrival of the plume. The CRAC2 evacuation model has several zones as described in Figure 9.2-2. The people within the keyhole-shaped area are evacuated completely. The people within the radius R_2 (i.e., the area other than keyhole-shaped area) are expected to take special sheltering precautions. The people outside of the radius R_2 are supposed to behave "normally."

The NRC recommended that the radius for the emergency planning zone be 10 miles [Reference 11]. Therefore, the values of R_e and R_i were set at 10 miles, and the value of θ set at 360° for this study. The value of R_2 was arbitrarily set at 20 miles. In a real situation, the exact evacuation scheme would presumably be decided on the day by the emergency response team, and the scheme would include evacuation, sheltering, or a combination of both for each zone described above. For the purpose of the present study, it is conservatively assumed that people within the special sheltering zone behave normally until relocated 6.0 hours after the passage of the radioactive plume. Beyond R_2, people are assumed to behave normally until relocated after seven days, or after one day if the predicted radiation dose to the bone marrow would exceed 200 rem.

The evacuation delay time is the period between the declaration of a General Emergency by the plant emergency director and the time at which evacuation actually begins. The delay time along with the effective evacuation speed can profoundly influence the results of a consequence analysis.

Two different evacuation models are available as options in the CRAC2 computer code. The first evacuation model is based on a constant effective evacuation velocity with no delay time, which is the model used in the RSS. The second evacuation model is based on a constant evacuation velocity with the delay time. The second model is an improved model to provide a more adequate evaluation of evacuation as a radiological emergency response. The revised treatment incorporates a delay time before public movement, followed by evacuation radially away from the reactor at a constant speed. Different shielding factors and breathing rates are used while evacuees await evacuation or are being evacuated. All persons within the designated evacuation area are assumed to move as a group at the same speed after an assumed delay time. No consideration is given to the possibility of a non-participating segment of the population. This latter assumption results in upper bound estimates of evacuation effectiveness, given a specific delay time and velocity. The evacuation effectiveness would decrease linearly with an increasing nonparticipating fraction of the population. Evacuating persons are assumed to move to a specified distance from the site, and are then assumed to avoid further exposure to the radioactive plume.

The revised evacuation model also calculates more realistic exposure durations to airborne and ground-deposited radionuclides than the RSS evacuation model. The RSS emergency evacuation model employs an exposure model for an instantaneous point source such that all released plumes have zero effective lengths. Because of this, evacuating persons overtaken by the plume in the RSS evacuation model are exposed to the entire plume at the point they are overtaken by the plume. However, a released plume of radioactive material would have a finite release duration and a length that depends on the wind speed during and following the release. A person overtaken by the front of the plume might still escape before being passed by the entire plume and thus would receive only a fraction of the full plume exposure. It is also possible that an evacuating person may travel under the plume for a long time and thus receive more exposure than if he had remained

stationary during the passage of the plume. The revised evacuation model assigns the plume a finite length which is calculated using the assumed release duration and wind speed during the release. To simplify the treatment, the length of the cloud is assumed to remain constant following the release (i.e., the front and back of the plume travel at the same speed), and the concentration of radioactive material is assumed to be uniform over the length of the cloud. The radial position of evacuating persons, while stationary and while in transit, is compared to the positions of the front and back of the plume as a function of time to determine a more realistic period of exposure to airborne radionuclides. The revised treatment calculates the time periods during which people are exposed to radionuclides on the ground while they are stationary and while they are evacuating. Because radionuclides would be deposited continually from the plume while passing a given location, a person while under the plume would be exposed to ground contamination which is less concentrated than if the cloud had completely passed. To account for this, the revised model assumes that persons completely passed by the plume are exposed to the total ground contamination calculated to exist after complete passage of the plume, to one-half the calculated ground contamination when anywhere under the cloud, and to no concentration when in front of the plume.

The evacuation models in CRAC2 do not account for actual road networks, road capacity limitations, or lateral travel possibilities.

9.2.6.2 Population Sheltering

In this model, nonevacuating people living within the maximum sheltering distance are sheltered using the shielding factors defined for the sheltering region. Sheltering, as used by this emergency response model, is defined as the deliberate action by the public to take advantage of the protection against radiation exposure afforded by remaining indoors, away from doors and windows, during and after the passage of the radioactive plume. The shielding inherent in normally inhabited structures offers some degree of protection against external penetrating radiation from airborne and ground-deposited radionuclides. Furthermore, the exclusion of a significant amount of airborne radioactive material from the interior of a structure, either by natural effects or by certain ventilation strategies, can reduce the amount of inhaled radionuclides as well. The shielding provided by a structure against external penetrating radiation from airborne or surface-deposited radionuclides is expressed in terms of a shielding factor which is the ratio of the dose received inside the structure to the dose that would be received outside the structure.

9.2.6.3 Population Relocation

Population relocation is defined in this emergency response model to be early relocation of nonevacuating people following deposition. The model provides two alternatives: relocation at a specified time following the deposition; or relocation at seven days following the deposition, conditional on a bone marrow dose that exceeds 200 rem.

Population relocation is a post-accident protective measure designed to limit radiation exposure from radionuclides deposited on the ground and other surfaces. Since relocation is a post-accident response, it can be implemented in a more selective manner than an immediate evacuation. In many instances, external exposure to contaminated surfaces would, in a relatively short time, result in a dose much greater than the dose due to the other exposure pathways.

9.2.7 Health Effects Due to Radiation Doses

The CRAC2 code determines the health effects which might occur due to the radiation doses from radioactivity released into the environment during a nuclear reactor accident. Two general categories of health effects are considered; early health effects and latent health effects. Early health effects, which might be detected within a few days up to one year after the radiation doses from early exposure, include early fatalities and injuries. Latent health effects, which might show up at least one year after the radiation doses, include latent cancer fatalities, thyroid effects, and genetic effects. Latent health effects are calculated for the radiation doses received from early exposure and chronic exposure, which are discussed in Section 9.2.5. The health effects models used in CRAC2 are unchanged from the CRAC health effects model of the RSS, except the risk factor data for latent cancer effects. This new risk factor data reflects the lifetime risk of latent cancer from a radiation exposure. Early health effects are discussed in Section 9.2.7.1, and the latent health effects are discussed in Section 9.2.7.2.

9.2.7.1 Early Health Effects

The early health effects considered in CRAC2 are early fatalities and injuries. The detailed descriptions of early health effects due to radiation doses can be found in Section 9.2 of Appendix VI of the RSS.

Early fatalities are calculated based on the acute radiation doses from cloudshine, groundshine, and inhaled radionuclides. Early fatalities essentially result from radiation damage to the bone marrow, lung, and gastrointestinal tract. For the specific radionuclide mixture released in a reactor accident, radiation damage to the bone marrow is the most dominant contributor to early fatalities. The total probability (P_{total}) of early fatality in CRAC2 is computed as:

$$P_{total} = P_{bone} + (1 - P_{bone})\, P_{lung} + (1 - P_{bone})\,(1-P_{lung})\, P_{GI}$$

where P_{bone}, P_{lung}, and P_{GI} are the probabilities of early fatality associated with the bone marrow, lung, and gastrointestinal tract, respectively.

Early injuries are defined as those illnesses requiring medical attention or hospital treatment. Early injuries are estimated on the basis of acute radiation exposure of the whole body, lungs, and lower large intestinal wall. These models are described in Section 9.2.3

of Appendix VI of the RSS. The total probability of early injury is calculated in the same method as for early fatalities, but only persons who did not suffer early fatalities are considered.

9.2.7.2 Latent Health Effects

The latent health effects considered in CRAC2 are latent cancer fatalities, thyroid effects, and genetic effects. Latent health effects are calculated for both early exposure and chronic exposure during a reactor accident. The following subsections describe the latent cancer fatalities, thyroid effects, and genetic effects.

9.2.7.2.1 Latent Cancer Fatalities

There are two methods for estimating latent cancer fatalities; the linear hypothesis method and the central estimate method. The lineary hypothesis method assumes a linear relationship between radiation doses and latent cancer fatalities. The central estimate method assumes a stepwise linear relationship between doses and latent cancer fatalities. This relationship is based on the assumption that lower doses and lower dose rates to an individual will result in a reduced risk of cancer per unit dose of radiation. This study primarily used the central estimate method. Table 9.2-10 shows data used by the CRAC2 computer code to calculate latent cancer fatalities due to early radiation exposure. The risk factor data is revised version of those reported in the RSS. The risk factors of the RSS assumed a latency period during which the risk of cancer is assumed to be zero, followed by a risk period (risk plateau) where the individual is assumed to be at a constant risk of cancer as shown on Figure 9.2-3. Depending on the type of cancer and the age of the exposed individual, the latency periods ranged from 0 to 15 years and the risk periods ranged from 10 to 30 years. Based on recommendations in BEIR III [Reference 12], the risk factors used in CRAC2 were revised to reflect extension of the risk period to the end of an individual's life for all cancers except leukemia. For the estimation of risk due to breast cancer, the linear hypothesis method is always used.

For each weather sequence and radioactive plume trajectory, the total number of latent cancer fatalities due to early exposure is determined by summing the products of spatial interval risk and its population at risk. The population at risk in a given spatial interval is determined by the plume widths and wind direction. The portion of the population that suffered early fatalities are excluded from the calculation of latent cancer fatalities due to early exposure.

As discussed in Section 9.2.5, the chronic exposure comes from groundshine, inhalation of resuspended radioactive material, and ingestion of contaminated crops and milk. The number of latent cancer fatalities which might result from the chronic exposure are calculated as was done for the latent cancer fatalities due to early exposure using the central estimate method.

The total number of latent cancer fatalities for a given meteorological sequence is determined by summing the fatalities due to early exposure and the fatalities due to chronic exposure.

9.2.7.2.2 Thyroid Effects

The CRAC2 code calculates the total number of thyroid nodules that would result from early exposure doses and from chronic doses received in the interval from zero to one year. Early exposure doses to the thyroid are treated somewhat differently from the rest of the organs. In addition to early groundshine and cloudshine, three categories of inhalation dose are computed: I-131, all other iodines, and all other nuclides. When calculating the number of thyroid nodules, CRAC2 treats the I-131 dose from early inhalation as being only 10 percent as effective as external irradiation. This 10 percent portion of the I-131 thyroid dose is summed with the thyroid doses resulting from other radionuclides to obtain an effective early exposure dose for calculating effects. If the total thyroid dose is less than 1500 rem, the total number of nodules is equal to the effective early exposure dose times the dose conversion factor. If the total thyroid dose is between 1500 and 5000 rem, the total number of nodules predicted with the dose conversion factor is cut in half. If the dose is above 5000 rem, there will be no nodules (thyroid ablation). This model is further discussed in Section 9.3.5 of Appendix VI of the RSS.

CRAC2 does not apply the 0.1 effectiveness factor to the I-131 inhalation dose from the chronic exposure pathways. For chronic doses, total number of nodules is equal to the product of total man-rem and the risk factor. CRAC2 assumes that 334 nodules will result per 10^6 man-rem. A more complete discussion of the concept behind the above model is found in Appendix VI of the RSS.

The individual risk of having a thyroid nodule for early exposure, TH_{early}, is calculated as follows:

$$TH_{early} = [(D_i - 0.9 \times D_{I131} + D_c + D_g] \times RF$$

$$D_{i,total} = D_{I131} + D_{I,other} + D_\gamma$$

if $D_{i,total} > 5000$ rem, $TH_{early} = 0.0$

if $D_{i,total} < 5000$ rem but > 1500 rem, $TH_{early} = TH_{early}/2.0$

where RF = risk factor, 334 nodules per 10^6 man-rem

D_i = total inhalation doses received within one year

D_c = early external doses due to cloudshine

D_g = early external doses due to groundshine

D_{I131} = one year inhalation doses from I-131

$D_{I,other}$ = one year inhalation doses from other iodines

D_{γ} = one year inhalation doses from other gamma emitters

The calculated risk per individual is applied to the surviving exposed population within a given spatial interval to determine the number of thyroid nodules.

The CRAC2 code also calculates the number of nodules that can result from chronic doses received in the interval from zero to one year. In this case, inhalation doses due to I-131 are not treated with reduced effectiveness. This calculation is done in the same manner as the calculation of latent cancer fatalities for chronic exposure. The following equation is employed.

$$TH_{chronic} = [P_1 \times (D_1 + D_4) + P_2 \times D_2 + P_3 \times D_3] \times RF$$

where $TH_{chronic}$ = number of thyroid nodules due to chronic exposure

P_1 = population within a given spatial interval within the contaminated area

P_2 = population that are exposed via ingestion of contaminated crops

P_3 = population that are exposed via ingestion of contaminated milk

D_1 = thyroid doses via inhalation of resuspended radioactive materials [rem]

D_2 = thyroid doses via ingestion of contaminated crops [rem]

D_3 = thyroid doses via ingestion of contaminated milk [rem]

D_4 = external doses to thyroid due to groundshine [rem]

RF = risk factor for thyroid nodules, 334 nodules per 10^6 man-rem

9.2.7.2.3 Genetic Effects

The RSS used the BEIR I report [Reference 13] to prepare figures for potential genetic effects per 10^6 man-rem of external and internal radiation exposure. The estimates of genetic effects in the BEIR III [Reference 12] are based on new data that have become available since BEIR I report was published in 1972, but they are not significantly different from the BEIR I estimates. Therefore, it is reasonable to continue using the genetic effect model in CRAC2 which is based on the BEIR I report.

The genetic effects are about equal in number to the latent cancer fatalities. Therefore, the genetic effects will not be part of the final output for this study. The detailed description of the genetic effects are in Section 9.4 of Appendix VI of the RSS.

9.2.8 Economic Impacts Due to a Reactor Accident

The economic impact model in CRAC2 estimates the direct costs of measures taken to mitigate the public health effects of a reactor accident. The model estimates the cost of evacuation, milk and crop disposal, decontamination, and land use prohibition (interdiction) which may be required after an accident. Supporting economic data associated with these costs are supplied as input data. The model is identical in structure to the original CRAC economic model described in the RSS.

The economic models of consequence analysis require several cost elements Thus, for example, the cost of evacuating a person is assigned a given value, and the total cost of evacuation is merely that figure multiplied by the number of people evacuated. The quantity of each agricultural product condemned is calculated and multiplied by the value of a unit quantity of that product. The economic model is thus a simple counting and adding routine in which the key factors are the unit costs of each counter-measure. An illustrative list of required cost inputs is as follows:

1. Evacuation cost per person.
2. Value of residential, business, and public areas per person.
3. Relocation cost per person.
4. Decontamination cost per acre for farm areas.
5. Decontamination cost per person for residential, business, and public areas.
6. Compensation rate per year for residential, business, and public areas (i.e., fraction of value).
7. Average value of farmland per acre for State, county, or smaller areas.
8. Average annual value of farm sales per acre for State, county, or smaller areas.
9. Miscellaneous information, such as seeding and harvesting month, fraction of land devoted to farming, fraction of farm sales due to dairy production.

Hence, the economic model essentially adds the costs incurred for evacuation, relocation, the interdiction of land use, and the destruction of crops. Note that it does not consider the cost of health effects (this would involve assigning a monetary value to life, which would be extremely controversial). It does not consider any economic multiplier effects (e.g., the effect on employment in one area if a factory in another has to close). There is no attempt to incorporate plant costs, although in the prediction of economic risk the contribution of the in-plant property damage far exceeds that of the offsite property damage. As demonstrated by the accident at Three Mile Island, the costs of decontaminating and reconstructing the plant and of replac power may be several billion dollars even though the offsite consequence may be very small indeed.

Table 9.2-1 Meteorological Bin Descriptions

Bin #	Notation	Description of Weather Sequence Category
1.	R(0)	- Rainfall at the site
2.	R(0-5)	- Rainfall between 0-5 miles from the site
3.	R(5-10)	- Rainfall between 5-10 miles from the site
4.	R(10-15)	- Rainfall between 10-15 miles from the site
5.	R(15-20)	- Rainfall between 15-20 miles from the site
6.	R(20-25)	- Rainfall between 20-25 miles from the site
7.	R(25-30)	- Rainfall between 25-30 miles from the site
8.	S(0-10)	- Wind speed slowdown between 0-10 miles from the site
9.	S(10-15)	- Wind speed slowdown between 10-15 miles from the site
10.	S(15-20)	- Wind speed slowdown between 15-20 miles from the site
11.	S(20-25)	- Wind speed slowdown between 20-25 miles from the site
12.	S(25-30)	- Wind speed slowdown between 25-30 miles from the site
13.	C3	- Initial stability category A, B, or C, with initial wind speed < 3 m/sec
14.	C4	- Initial stability category A, B, or C, with initial wind speed > 3 m/sec
15.	D1	- Initial stability category D, with initial wind speed < 1 m/sec
16.	D2	- Initial stability category D, with initial wind speed 1-2 m/sec
17.	D3	- Initial stability category D, with initial wind speed 2-3 m/sec
18.	D4	- Initial stability category D, with initial wind speed 3-5 m/sec
19.	D4	- Initial stability category D, with initial wind speed > 5 m/sec
20.	E1	- Initial stability category E, with initial wind speed < 1 m/sec

Table 9.2-1 Meteorological Bin Descriptions (Continued)

Bin #	Notation	Description of Weather Sequence Category
21.	E2	- Initial stability category E, with initial wind speed of 1-2 m/sec
22.	E3	- Initial stability category E, with initial wind speed of 2-3 m/sec
23.	E4	- Initial stability category E, with initial wind speed of 3-5 m/sec
24.	E5	- Initial stability category E, with initial wind speed > 5 m/sec
25.	F1	- Initial stability category F, with initial wind speed < 1 m/sec
26.	F2	- Initial stability category F, with initial wind speed of 1-2 m/sec
27.	F3	- Initial stability category F, with initial wind speed of 2-3 m/sec
28.	F4	- Initial stability category F, with initial wind speed of 3-5 m/sec
29.	F5	- Initial stability category F, with initial wind speed > 5 m/sec

Note: Wind speed slowdown is defined to be wind speeds greater than 3 m/sec decreasing to less than 2 m/sec.

Table 9.2-2 Summarized Meteorological Bin Categories For Browns Ferry Nuclear Plant Site

Meteorological Bin Definitions

R - Rain within intervals
S - Slowdowns within intervals
C D E F - Stability categories
1 (0-1), 2 (1-2), 3 (2-3), 4 (3-5), 5 (GT 5) - wind speed intervals (m/s)

Met Bin		Number of Sequence	Percent
1	R (0)	561	6.4041
2	R (0-5)	8	.0913
3	R (5-10)	58	.6621
4	R (10-15)	73	.8333
5	R (15-20)	78	.8904
6	R (20-25)	57	.6507
7	R (25-30)	64	.7306
8	S (0-10)	44	.5023
9	S (10-15)	21	.2397
10	S (15-20)	33	.3767
11	S (20-25)	37	.4224
12	S (25-30)	33	.3767
13	C 3	10	.1142
14	C 4	16	.1826
15	D 1	53	.6050
16	D 2	330	3.7671
17	D 3	544	6.2100
18	D 4	1147	13.0936
19	D 5	2074	23.6758
20	E 1	38	.4338
21	E 2	178	2.0320
22	E 3	305	3.4817
23	E 4	796	9.0868
24	E 5	1247	14.2352
25	F 1	14	.1598
26	F 2	64	.7306
27	F 3	96	1.0959
28	F 4	271	3.0936
29	F 5	510	5.8219
Total		8760	100.00

TABLE 9.2-3 DRY AND WET DEPOSITION COEFFICIENTS

NO.	NUCLIDE	GROUP	DEPOSITION VELOCITY (M/SEC)	RAIN DEPLETION
1	CO-58	7	1.000E-02	1.000E+00
2	CO-60	7	1.000E-02	1.000E+00
3	KR-85	1	0.0	0.0
4	KR-85M	1	0.0	0.0
5	KR-87	1	0.0	0.0
6	KR-88	1	0.0	0.0
7	RB-86	4	1.000E-02	1.000E+00
8	SR-89	6	1.000E-02	1.000E+00
9	SR-90	6	1.000E-02	1.000E+00
10	SR-91	6	1.000E-02	1.000E+00
11	Y-90	8	1.000E-02	1.000E+00
12	Y-91	8	1.000E-02	1.000E+00
13	ZR-95	8	1.000E-02	1.000E+00
14	ZR-97	8	1.000E-02	1.000E+00
15	NB-95	8	1.000E-02	1.000E+00
16	MO-99	7	1.000E-00	1.000E+00
17	TC-99M	7	1.000E-02	1.000E+00
18	RU-103	7	1.000E-02	1.000E+00
19	RU-105	7	1.000E-02	1.000E+00
20	RU-106	7	1.000E-02	1.000E+00
21	RH-105	7	1.000E-02	1.000E+00
22	SB-127	5	1.000E-02	1.000E+00
23	SB-129	5	1.000E-02	1.000E+00
24	TE-127	5	1.000E-02	1.000E+00
25	TE-127M	5	1.000E-02	1.000E+00
26	TE-129	5	1.000E-02	1.000E+00
27	TE-129M	5	1.000E-02	1.000E+00
28	TE-131M	5	1.000E-02	1.000E+00
29	TE-132	5	1.000E-02	1.000E+00
30	I-131	3	1.000E-02	1.000E+00
31	I-132	3	1.000E-02	1.000E+00
32	I-133	3	1.000E-02	1.000E+00
33	I-134	3	1.000E-02	1.000E+00
34	I-135	3	1.000E-02	1.000E+00
35	XE-133	1	0.0	0.0
36	XE-135	1	0.0	0.0
37	CS-134	4	1.000E-02	1.000E+00
38	CS-136	4	1.000E-02	1.000E+00
39	CS-137	4	1.000E-02	1.000E+00
40	BA-140	6	1.000E-02	1.000E+00
41	LA-140	8	1.000E-02	1.000E+00
42	CE-141	8	1.000E-02	1.000E+00
43	CE-143	8	1.000E-02	1.000E+00
44	CE-144	8	1.000E-02	1.000E+00
45	PR-143	8	1.000E-02	1.000E+00
46	ND-147	8	1.000E-02	1.000E+00
47	NP-239	8	1.000E-02	1.000E+00

TABLE 9.2-3 (Continud)

NO.	NUCLIDE	GROUP	DEPOSITION VELOCITY (M/SEC)	RAIN DEPLETION
48	PU-238	8	1.000E-02	1.000E+00
49	PU-239	8	1.000E-02	1.000E+00
50	PU-240	8	1.000E-02	1.000E+00
51	PU-241	8	1.000E-02	1.000E+00
52	AM-241	8	1.000E-02	1.000E+00
53	CM-242	8	1.000E-02	1.000E+00
54	CM-244	8	1.000E-02	1.000E+00

Table 9.2-4 Correction Factors from Semi-infinite Cloud Doses to a Finite Cloud Doses ($D_c/D_{c,\ i}$)*

ertical iffusion z [m]	Height of Cloud Centerline, z/σ_z					
	0	1	2	3	4	5
3	0.020	0.018	0.011	0.066	0.005	0.004
10	0.074	0.060	0.036	0.020	0.015	0.011
20	0.150	0.120	0.065	0.035	0.024	0.016
30	0.220	0.170	0.088	0.046	0.029	0.017
50	0.350	0.250	0.130	0.054	0.028	0.013
100	0.560	0.380	0.150	0.045	0.106	0.004
200	0.760	0.511	0.150	0.024	0.004	0.001
400	0.899	0.600	0.140	0.014	0.001	0.001
1000	0.951	0.600	0.130	0.011	0.001	0.001

* $D_c/D_{ci} = \frac{\text{dose from spherical cloud}}{\text{dose from semi-infinite cloud}}$

Reference: Table VI 8-1 of RSS.

Table 9.2-5 Dose Conversion Factors For Cloudshine
[rem/C_i - sec/m^3]

Nuclide	W Body	T Marrow	Lung	Testes
CO-58	2.160E-01	2.400E-01	2.010E-01	2.010E-01
CO-60	6.000E-01	6.310E-01	5.670E-01	4.890E-01
KR-85	4.750E-04	5.780E-04	4.470E-04	5.280E-04
KR-85M	3.640E-02	5.500E-02	3.220E-02	4.780E-02
KR-87	1.810E-01	1.920E-01	1.720E-01	1.320E-01
KR-88	4.670E-01	4.830E-01	4.470E-01	2.830E-01
RB-86	2.070E-02	2.270E-02	1.940E-02	1.870E-02
SR-89	0.	0.	0.	0.
SR-90	0.	0.	0.	0.
SR-91	1.690E-01	1.930E-01	1.600E-01	1.640E-01
Y-90	0.	0.	0.	0.
Y-91	6.250E-04	6.390E-04	5.940E-04	4.670E-04
ZR-95	1.620E-01	1.870E-01	1.520E-01	1.610E-01
ZR-97	4.220E-02	4.720E-02	4.000E-02	3.860E-02
NB-95	1.660E-01	1.830E-01	1.560E-01	1.520E-01
MO-99	3.640E-02	4.440E-02	3.420E-02	3.920E-02
TC-99M	3.060E-02	5.420e-02	2.540E-02	2.840E-02
RU-103	1.110E-01	1.360E-01	1.050E-01	1.240E-01
RU-105	1.79pE-01	2.210E-01	1.670E-01	1.970E-01
RU-106	4.310E-02	5.220E-02	4.060E-02	4.690E-02
RH-105	1.820E-02	2.740E-02	1.610E-02	2.360E-02
TE-127	9.360E-04	1.160E-03	8.780E-04	1.050E-03
TE-127M	1.100E-03	1.790E-03	5.610E-04	1.500E-03
TE-129	1.470E-02	1.810E-02	1.350E-02	1.610E-02
TE-129M	7.830E-03	9.920E-03	6.970E-03	8.860E-03
TE-131M	3.140E-01	3.560E-01	2.940E-01	2.850E-01
TE-132	4.750E-02	7.310E-02	4.190E-02	6.140E-02
SB-127	1.510E-01	1.840E-01	1.430E-01	1.630E-01
SB-129	2.680E-01	2.970E-01	2.530E-01	2.470E-01
I-131	8.720E-02	1.080E-01	8.220E-02	9.750E-02
I-132	5.110E-01	5.890E-01	4.830E-01	5.030E-01
I-133	1.540E-01	1.830E-01	1.460E-01	1.620E-01
I-134	5.330E-01	5.890E-01	5.000E-01	4.830E-01
I-135	4.190E-01	4.420E-01	4.000E-01	3.390E-01
XE-133	9.060E-03	1.590E-02	6.970E-03	9.280E-03
XE-135	5.670E-02	8.470E-02	5.060E-02	7.360E-02
CS-134	3.500E-01	4.030E-01	3.280E-01	3.500E-01
CS-136	4.780E-01	5.420E-01	4.440E-01	4.440E-01
CS-137	1.220E-01	1.490E-01	1.150E-01	1.350E-01
BA-140	4.440E-02	5.610E-02	4.140E-02	5.060E-02
LA-140	5.670E-01	6.060E-01	5.390E-01	4.580E-01
CE-141	1.830E-02	3.220E-02	1.500E-02	1.740E-02
CE-143	6.810E-02	9.360E-02	6.080E-02	7.890E-02

Table 9.2-5 (Continued)

Nuclide	W Body	T Marrow	Lung	Testes
CE-144	4.310E-03	7.610E-03	3.440E-03	4.170E-03
PR-143	0.	0.	0.	0.
ND-147	3.140E-02	4.390E-02	2.780E-02	3.420E-02
NP-239	3.080E-02	4.970E-02	2.650E-02	3.580E-02
PU-238	5.250E-05	4.250E-05	9.580E-06	4.190E-05
PU-239	2.300E-05	2.170E-05	5.420E-06	1.940E-05
PU-240	4.640E-05	3.890E-05	9.170E-06	3.700E-05
PU-241	4.170E-10	8.530E-10	2.940E-10	3.650E-10
AM-241	4.560E-03	9.330E-03	3.220E-03	3.980E-03
CM-242	5.00E-05	3.890E-05	8.310E-06	3.990E-05
CM-244	1.420E-03	2.810E-03	1.070E-03	1.270E-03

TABLE 9.2-6
DOSE CONVERSION FACTORS FOR GROUNDSHINE FOR TIME INTEGRAL
DOSE TO 8 HOURS [rem per Ci/m^2]

Nuclide	W Body	T Marrow	Lung	Testes
CO-58	1.100E+02	1.230E+02	1.030E+02	1.030E+02
CO-60	2.820E+02	2.960E+02	2.660E+02	2.300E+02
KR-85	2.420E-01	2.970E-01	2.300E-01	2.690E-01
KR-85M	1.040E+01	1.570E+01	9.220E+00	1.350E+01
KR-87	1.810E+01	1.930E+01	1.730E+01	1.320E+01
KR-88	1.170E+01	1.190E+02	1.110E+02	7.000E+01
RB-86	9.890E+00	1.090E+01	9.270E+00	8.990E+00
SR-89	0.	0.	0.	0.
SR-90	0.	0.	0.	0.
SR-91	8.730E+01	1.020E+02	8.250E+01	8.790E+01
Y-90	0.	0.	0.	0.
Y-91	2.940E-01	3.010E-01	2.810E-01	2.210E-01
ZR-95	8.180E+01	9.460E+01	7.720E+01	8.130E+01
ZR-97	1.390E+02	1.670E+02	1.310E+02	1.500E+02
NB-95	8.340E+01	9.170E+01	7.820E+01	7.590E+01
MO-99	2.380E+01	3.130E+01	2.180E+01	2.490E+01
TC-99M	9.700E+00	1.74E+01	8.120E+00	9.110E+00
RU-103	5.860E+01	7.160E+01	5.520E+01	6.530E+01
RU-105	5.190E+01	6.440E+01	4.850E+01	5.720E+01
RU-106	2.180E+01	2.650E+02	2.060E+01	2.380E+01
RH-105	8.500E+00	1.280E+01	7.530E+01	1.110E+01
TE-127	3.660E+01	4.540E+01	3.430E+01	4.100E+01
RU-103	5.860E+01	7.160E+01	5.520E+01	6.530E+01
TE-127M	2.530E+00	4.080E+00	1.340E+00	3.420E+00
TE-129	1.970E+00	2.420E+00	1.810E+00	2.150E+00
TE-129M	1.140E-01	1.420E-01	1.020E+01	1.260E+01
TE-131M	1.500E+02	1.710E+02	1.390E+02	1.360E+02
TE-132	1.810E+02	2.170E+02	1.690E+02	1.840E+02
SB-127	7.510E+01	9.070E+01	7.050E+01	8.070E+01
SB-129	7.460E+01	8.250E+01	6.990E+01	6.760E+01
I-131	4.410E-01	5.450E-01	4.150E+01	4.940E+01
I-132	9.800E+01	1.130E+02	9.230E+01	9.600E+01
I-133	6.870E-01	8.130E-01	6.500E+01	7.150E+01
I-134	4.120E+01	4.550E+01	3.870E+01	3.750E+01
I-135	1.490E+02	1.600E+02	1.400E+02	1.250E+02
XE-133	7.500E+00	1.310E+01	5.750E+00	7.620E+00
XE-135	2.120E+01	3.160E+01	1.890E+01	2.740E+01
CS-134	1.760E-02	2.030E-02	1.660E+02	1.760E+02
CS-136	2.320E+02	2.640E+02	2.160E+02	2.160E+02
CS-137	6.170E+01	7.560E+01	5.840E+01	6.850E+01
BA-140	4.230E+01	5.000E+01	3.970E+01	4.250E+02
LA-140	2.450E+02	2.610E+02	2.330E+02	1.990E+02
CE-141	9.300E+00	1.650E+01	7.640E+00	8.860E+00

TABLE 9.2-6 (Continued)

Nuclide	W Body	T Marrow	Lung	Testes
CE-143	3.510E+01	4.830E+01	3.140E+01	4.070E+01
CE-144	5.630E-00	7.840E-00	4.980E+00	4.790E+00
PR-143	0.	0.	0.	0.
ND-147	1.770E+01	2.480E+01	1.570E+01	1.940E+01
NP-239	2.170E+01	3.490E+01	1.870E+01	2.520E+01
PU-238	2.970E-01	2.390E-01	5.410E-02	2.360E-00
PU-239	1.260E-01	1.190E-01	2.960E-02	1.060E-01
PU-240	2.600E-01	2.180E-01	5.150E-02	2.080E-01
PU-241	4.960E-06	1.030E+05	3.530E-06	4.380E-06
AM-241	6.900E+00	1.400E+01	4.840E+00	6.000E+00
CM-242	2.640E-01	2.050E-01	4.370E-02	2.100E-01
CM-244	1.650E+00	3.240E+00	1.240E+00	1.470E+00

TABLE 9.2-7
DOSE CONVERSION FACTORS FOR GROUNDSHINE FOR TIME INTEGRAL
DOSE TO 7 DAYS [rem per Ci/m^2]

Nuclide	W Body	T Marrow	Lung	Testes
CO-58	2.240E+03	2.500E+03	2.100E+03	2.090E+03
CO-60	5.880E+03	6.220E+03	5.580E+03	4.800E+03
KR-85	5.050E+00	6.220E+00	4.820E+00	5.660E+00
KR-85M	1.470E+01	2.210E+01	1.300E+01	1.910E+01
KR-87	1.830E+01	1.960E+01	1.750E+01	1.340E+01
KR-88	1.350E+02	1.390E+02	1.300E+01	8.100E+01
RB-86	1.850E+02	2.020E+02	1.730E+02	1.660E+02
SR-89	0.	0.	0.	0.
SR-90	0.	0.	0.	0.
SR-91	2.050E+02	2.390E+02	1.930E+02	2.070E+02
Y-90	0.	0.	0.	0.
Y-91	5.910E+00	6.060E+00	5.660E+00	4.440E+00
ZR-95	1.770E+03	2.040E+03	1.670E+03	1.760E+03
ZR-97	5.380E+02	6.520E+02	5.100E+02	5.890E+02
NB-95	1.640E+03	1.800E+03	1.540E+03	1.490E+03
MO-99	3.250E+02	4.650E+02	2.910E+02	3.320E+02
TC-99M	1.620E+01	2.880E+01	1.350E+01	1.510E+01
RU-103	1.160E+03	1.420E+03	1.090E+03	1.300E+03
RU-105	7.940E+01	9.990E+01	7.370E+01	8.910E+01
RU-106	4.560E+02	5.540E+02	4.300E+02	4.970E+02
RH-105	5.670E+01	8.550E+01	5.010E+01	7.370E+01
TE-127	8.130E+01	1.010E+00	7.670E+01	9.140E+01
TE-127M	5.840E+01	9.200E+01	3.370E+01	7.770E+01
TE-129	1.980E+00	2.440E+00	1.830E+00	2.170E+00
TE-129M	2.460E+02	3.070E+02	2.220E+02	2.740E+02
TE-131M	9.600E+02	1.100E+03	8.900E+02	8.860E+02
TE-132	3.080E+03	3.630E+03	2.880E+03	3.080E+03
SB-127	9.200E+02	1.110E+03	8.650E+02	9.950E+02
SB-129	1.040E+02	1.160E+02	9.780E+01	9.570E+01
I-131	7.080E+02	8.730E+02	6.630E+02	7.850E+02
I-132	1.070E+02	1.230E+02	1.010E+02	1.050E+02
I-133	3.110E+02	3.750E+02	2.910E+02	3.220E+02
I-134	4.140E+01	4.560E+01	3.880E+01	3.760E+01
I-135	2.850E+02	3.180E+02	2.690E+02	2.520E+02
XE-133	1.050E+02	1.840E+02	8.080E+01	1.080E+02
XE-135	4.620E+01	6.980E+01	4.160E+01	6.040E+01
CS-134	3.690E+03	4.260E+03	3.470E+03	3.670E+03
CS-136	4.100E+03	4.680E+03	3.820E+03	3.820E+03
CS-137	1.310E+03	1.600E+03	1.240E+03	1.460E+03
BA-140	3.650E+03	3.980E+03	3.460E+03	3.110E+03
LA-140	1.800E+03	1.920E+03	1.710E+03	1.460E+03
CE-141	1.820E+02	3.240E+02	1.500E+02	1.730E+02
CE-143	2.240E+02	3.080E+02	2.000E+02	2.590E+02
CE-144	1.200E+02	1.670E+02	1.070E+02	1.030E+02
PR-143	0.	0.	0.	0.
ND-147	3.050E+02	4.260E+02	2.700E+02	3.340E+02

TABLE 9.2-7 (Continued)

Nuclide	W Body	T Marrow	Lung	Testes
NP-239	2.020E+02	3.260E+02	1.740E+02	2.350E+02
PU-238	6.200E+00	5.020E+00	1.140E+00	4.970E+00
PU-239	2.630E+00	2.490E+00	6.220E+01	2.230E+00
PU-240	5.470E+00	4.570E+00	1.080E+00	4.380E+00
PU-241	2.210E+03	4.520E+03	1.560E+03	1.940E+03
AM-241	1.430E+02	2.950E+02	1.020E+02	1.260E+02
CM-242	5.460E+00	4.250E+00	9.050E+01	4.350E+00
CM-244	3.460E+01	6.810E+01	2.610E+01	3.080E+01

TABLE 9.2-8
DOSE CONVERSION FACTORS FOR INHALATION
ACUTE EXPOSURES [rem/Ci]

Nuclide	W Body	T Marrow	Lung	Testes
CO-58	1.100E+02	1.230E+02	1.030E+02	1.030E+02
CO-60	2.820E+02	2.960E+02	2.660E+02	2.300E+02
KR-85	2.420E+01	2.970E+01	2.300E+01	2.690E+01
KR-85M	1.040E+01	1.570E+01	9.220E+00	1.350E+01
KR-87	1.810E+01	1.930E+01	1.730E+01	1.320E+01
KR-88	1.170E+02	1.190E+02	1.110E+02	7.000E+01
RB-86	9.890E+00	1.090E+01	9.270E+00	8.990E+00
SR-89	0.	0.	0.	0.
SR-90	0.	0.	0.	0.
SR-91	8.730E+01	1.020E+02	8.250E+01	8.790E+01
Y-90	0.	0.	0.	0.
Y-91	2.940E-01	3.010E-01	2.810E-01	2.210E-01
ZR-95	8.180E+01	9.460E+01	7.720E+01	8.130E+01
ZR-97	1.390E+02	1.670E+02	1.310E+02	1.500E+02
NB-95	8.340E+01	9.170E+01	7.820E+01	7.590E+01
MO-99	2.380E+01	3.130E+01	2.180E+01	2.490E+01
TC-99M	9.700E-00	1.740E-01	8.120E-00	9.110E-00
RU-103	5.860E+01	7.160E+01	5.520E+01	6.530E+01
RU-105	5.190E+01	6.440E+01	4.850E+01	5.720E+01
RU-106	2.180E+01	2.650E+01	2.060E+01	2.380E+01
RH-105	8.500E+00	1.280E+01	7.530E+00	1.110E+01
TE-127	3.660E-01	4.540E-01	3.430E-01	4.100E-01
TE-127M	2.530E+00	4.080E+00	1.340E+00	3.420E+00
TE-129	1.970E+00	2.420E+00	1.810E+00	2.150E+00
TE-129M	1.140E+01	1.420E+01	1.020E+01	1.260E+01
TE-131M	1.500E+02	1.710E+02	1.390E+02	1.360E+02
TE-132	1.810E+02	2.170E+02	1.690E+02	1.840E+02
SB-127	7.510E+01	9.070E+01	7.050E+01	8.070E+01
SB-129	7.460E+01	8.250E+01	6.990E+01	6.760E+01
I-131	4.410E+01	5.450E+01	4.150E+01	4.940E+01
I-132	9.800E+01	1.130E+02	9.230E+01	9.600E+01
I-133	6.870E+01	8.130E+01	6.500E+01	7.150E+01
I-134	4.120E+01	4.550E+01	3.870E+01	3.750E+01
I-135	1.490E+02	1.600E+02	1.400E+02	1.250E+02
XE-133	7.500E+00	1.310E+01	5.750E+00	7.620E+00
XE-135	2.120E+01	3.160E+01	1.890E+01	2.740E+01
CS-134	1.760E+02	2.030E+02	1.660E+02	1.760E+02
CS-136	2.320E+02	2.640E+02	2.160E+02	2.160E+02
CS-137	6.170E+01	7.560E+01	5.840E+01	6.850E+01
BA-140	4.230E+01	5.000E+01	3.970E+01	4.250E+01
LA-140	2.450E+02	2.610E+02	2.330E+02	1.990E+02
CE-141	9.300E+00	1.650E+01	7.640E+00	8.860E+00
CE-143	3.510E+01	4.830E+01	3.140E+01	4.070E+01
CE-144	5.630E+00	7.840E+00	4.980E+00	4.790E+00
PR-143	0.	0.	0.	0.

Table 9.2-8 (Continued)

Nuclide	W Body	T Marrow	Lung	Testes
ND-147	1.770E+01	2.480E+01	1.570E+01	1.940E+01
NP-239	2.170E+01	3.490E+01	1.870E+01	2.520E+01
PU-238	2.970E+01	2.390E+01	5.410E+02	2.360E+01
PU-239	1.260E-01	1.190E-01	2.960E-02	1.060E-01
PU-240	2.600E-01	2.180E-01	5.150E-02	2.080E-01
PU-241	4.960E-06	1.030E-05	3.530E-06	4.380E-06
AM-241	6.900E+00	1.400E+01	4.840E+00	6.000E+00
CM-242	2.640E-01	2.050E-01	4.370E-02	2.100E-01
CM-244	1.650E+00	3.240E+00	1.240E+00	1.470E+00

Table 9.2-9
NUCLIDE INVOLVED IN CHRONIC EXPOSURE CALCULATIONS

No.	Nuclide	Half-Life [Days]	Chronic Exposure Pathways: Ground-shine	Inhalation	Ingestion
1	CO-58	7.130E+01	X		
2	CO-60	1.921E+03	X		
3	KR-85	3.919E+03			
4	KR-85M	1.867E-01			
5	KR-87	5.278E-02			
6	KR-88	1.167E-01			
7	RB-86	1.865E+01			
8	SR-89	5.200E+01			X
9	SR-90	1.026E+04		X	X
10	SR-91	3.950E-01			
11	Y-90	2.670E+00			
12	Y-91	5.880E+01			
13	ZR-95	6.550E+01	X		
14	ZR-97	7.000E-01			
15	NB-95	3.510E+01	X		
16	MO-99	2.751E+00			
17	TC-99M	2.508E-01			
18	RU-103	3.959E+01	X		
19	RU-105	1.850E-01			
20	RU-106	3.690E+02	X	X	
21	RH-105	1.479E+00	X	X	
22	SB-127	3.800E+00			
23	SB-129	1.808E-01			
24	TE-127	3.896E-01			
25	TE-127M	1.090E+02			
26	TE-129	4.861E-02			
27	TE-129M	3.340E+01			
28	TE-131M	1.250E+00			
29	TE-132	3.250E+00			
30	I-131	8.040E+00	X		X
31	I-132	9.521E-02			
32	I-133	8.667E-01			X
33	I-134	3.653E-02			
34	I-135	2.744E-01			
35	XE-133	5.290E+00			
36	XE-135	3.821E-01			
37	CS-134	7.524E+02	X		X
38	CS-136	1.300E+01	X		X
39	CS-137	1.099E+04	X		X
40	BA-140	1.279E+01			
41	LA-140	1.676E+00			
42	CE-141	3.253E+01			
43	CE-143	1.375E+00			
44	CE-144	2.844E+02			
45	PR-143	1.358E+01			
46	ND-147	1.099E+01			
47	NP-239	2.350E+00			

TABLE 9.2-9 (Continued)

No.	Nuclide	Half-Life [Days]	Chronic Exposure Pathways		
			Ground-shine	Inhalation	Ingestion
48	PU-238	3.251E+04		X	
49	PU-239	8.912E+06		X	
50	PU-240	2.469E+06		X	
51	PU-241	5.333E+03		X	
52	AM-241	1.581E+05		X	
53	CM-242	1.630E+02		X	
54	CM-244	6.611E+03		X	

Note: All 54 radionuclides enter the early exposure calculations.

Table 9.2-10 Data Used to Calculate Latent Cancer Fatalities

ıcer ɔpe	Organ Considered	Cancer Deaths Per 10^6 Person-rem of Internal Dose Due to Early Exposure — Time Period After Accident (Years)									Central Estimate Compensation Factor (ORGFAC)
		0-1	0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	
ıkemia	T Marrow	28.4	27.2	18.7	13.8	9.7	6.8	4.0	1.7	0.5	1.0
ıg	Lung	27.5	27.5	27.5	15.8	8.1	4.0	1.5	0.2	0.0	0.5
east	Other	31.7	31.7	31.7	18.3	9.4	4.6	1.7	0.3	0.0	1.0×10^9
ne	Skelton	11.1	10.6	7.0	3.0	1.7	0.9	0.4	0.1	0.0	1.0
Tract	LCI Wall	16.9	16.9	16.9	9.7	5.0	2.5	0.9	0.1	0.0	1.0
her	Other	32.2	30.5	25.4	14.7	7.5	3.7	1.4	0.2	0.0	1.0

ference: Table 3.5-1 of CRAC2 Model Description (Reference 3).

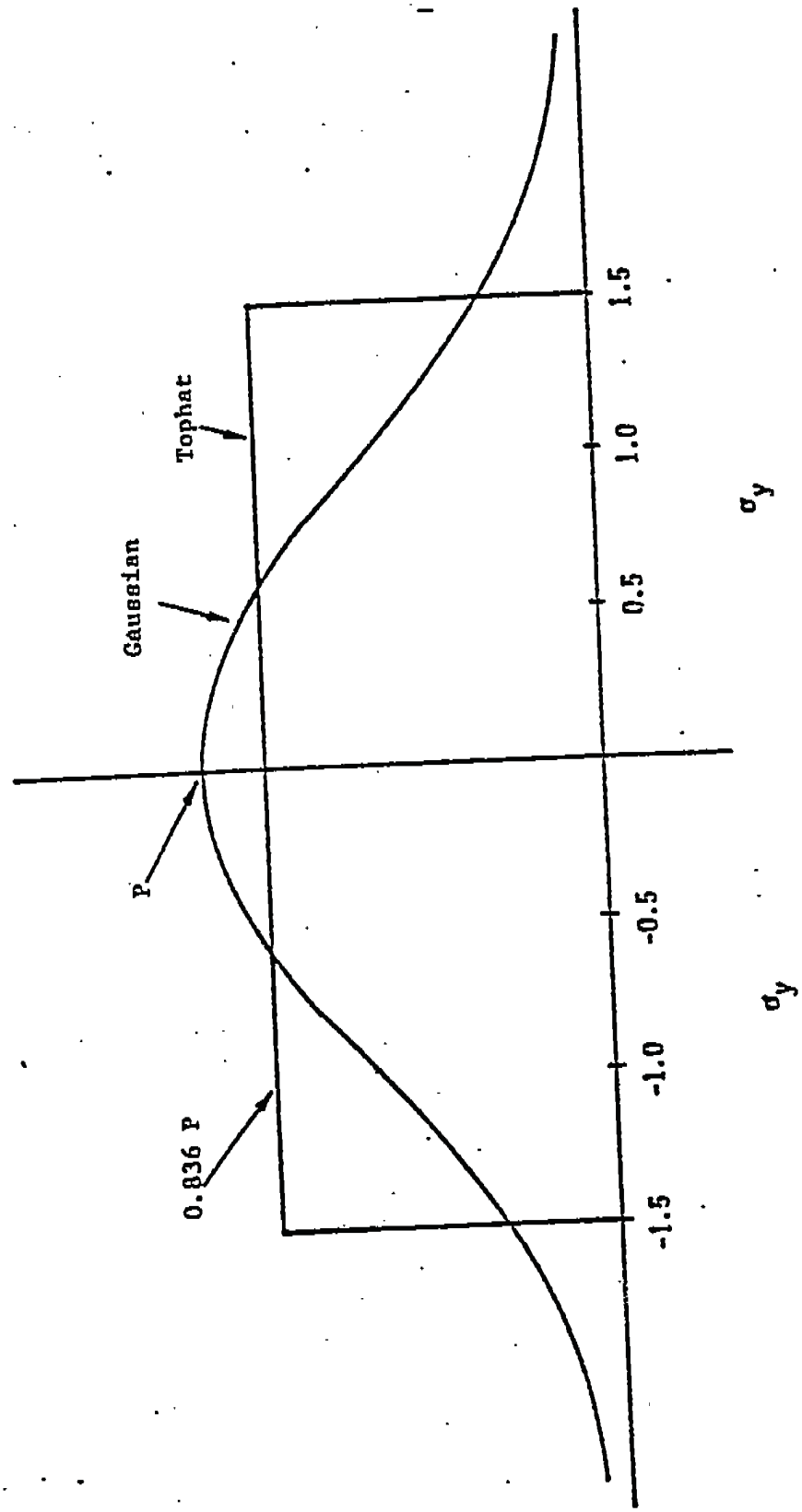
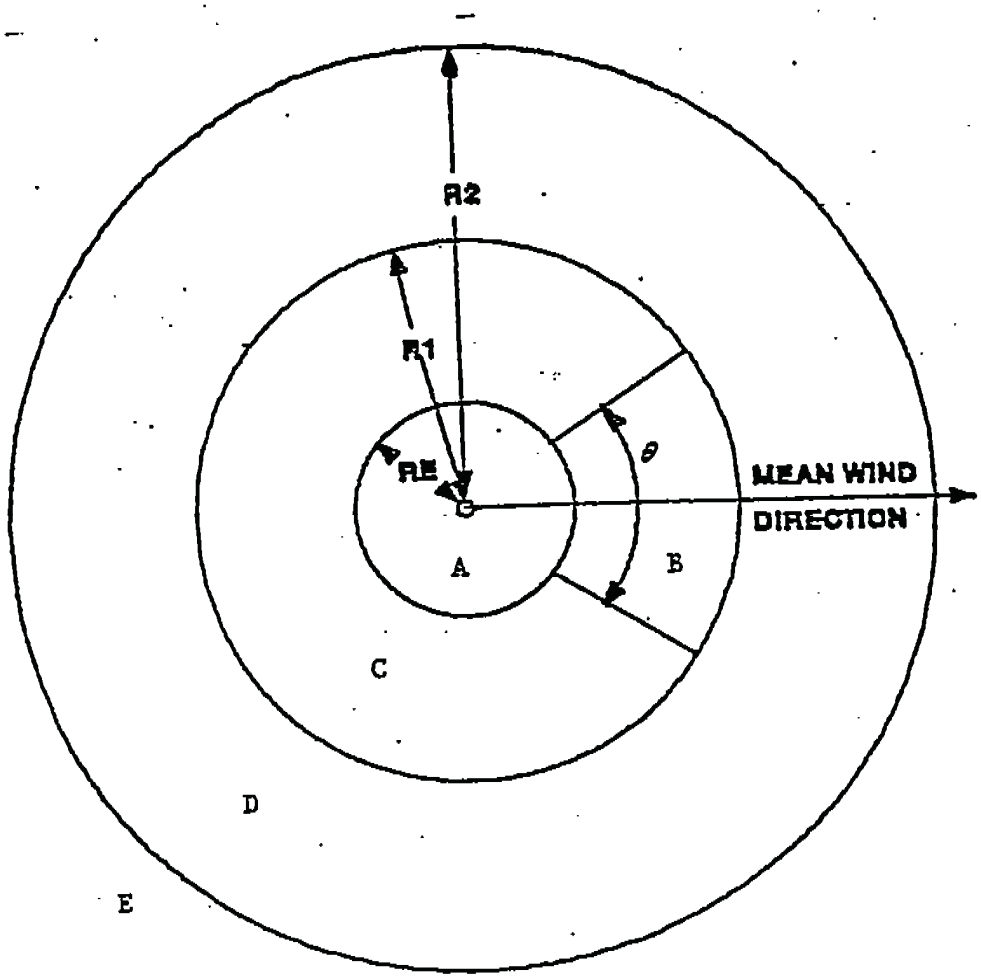


Figure 9.2-1. Comparison of Gaussian Distribution and Top-Hat Cross Plume Distribution in CRAC and CRAC2

Figure 9.2-2 CRAC2 Evacuation Zones



Region A: Zone within which people evacuate

Region B: Same as Region A

Region C: Same as Region A for this study

Region D: Special sheltering zone

Region E: Normal activity zone

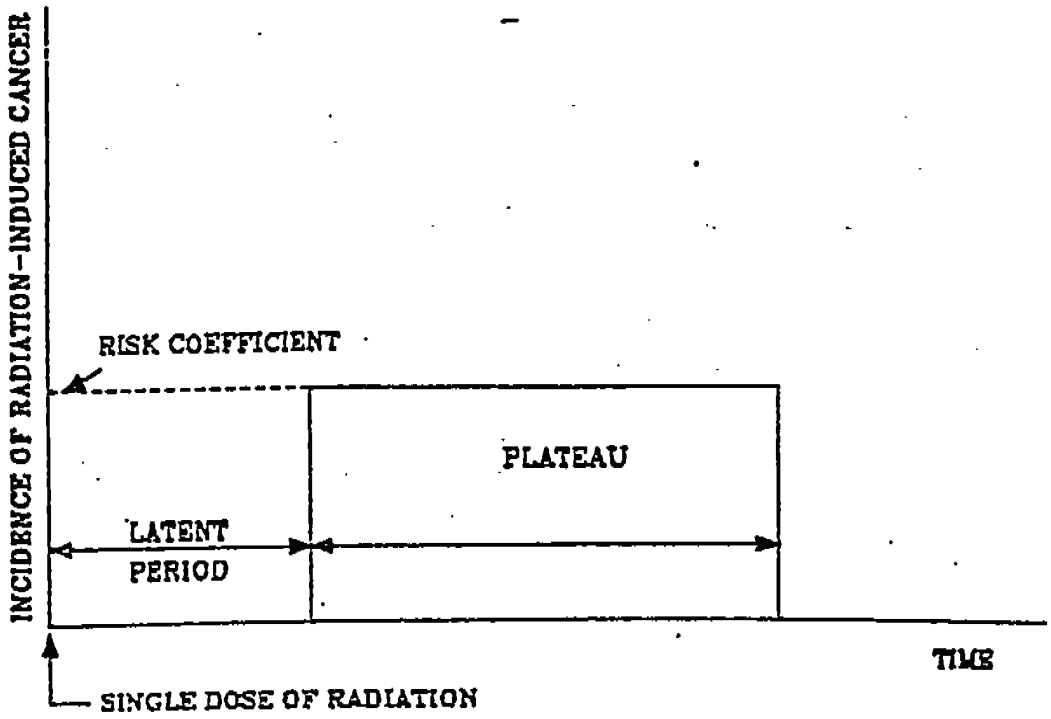


Figure 9.2-3 Basic Model for Latent Cancer Fatalities

9.3 BFN Site-Specific Information

9.3.1 Population Data

Population data was principally obtained from the BFN FSAR. This section will briefly summarize the data extracted from the FSAR.

The site is located on the north shore of Wheeler Lake in Limestone County in north Alabama. Athens, Alabama, is located approximately 10 miles northeast of the site while the center of Decatur, Alabama, is located 10 miles southeast of the site. Figures 9.3-1 and 9.3-2 presents maps of the site location for 60- and 10-mile radius, respectively.

There are 26 counties located within a 60-mile radius. The population and population densities for these counties are shown in Table 9.3-1. Data are shown for 1970-2020 at 10-year intervals. The data for 1980 or beyond was extrapolated from 1970 U.S. census data. In this PRA, note that Madison County, which contains the city of Huntsville, has the highest population density (248 persons per square mile based on 1980 data) while Morgan County containing Decatur has the second highest population density (155 persons per square mile based on 1980 data).

Table 9.3-2 shows the population of various towns and cities within 60 miles of the site for the years 1960 and 1970. Only 20 towns or cities had populations over 2,500 in 1970. Huntsville, the largest city is located 30 miles east of the BFN site while the nearest city with a population of 25,000 or greater is Decatur. Table 9.3-3 shows the 1970-2020 populations of towns and cities within 60 miles of the site having 2,500 or more residents.

The 1980 population distribution within 10 miles and 60 miles of the site are shown in Tables 9.3-4 and 9.3-5, respectively. The distributions are given as functions of compass direction and radial intervals about the site. Figures 9.3-3 and 9.3-4 show the polar diagrams of the populati distribution within 60 miles and 10 miles of the site, respectively.

The site consists of 840 acres and is located in an area where the land is used primarily for agriculture. There are no residences within 4500 feet of the reactor building and only 45 people living within 2 miles. Within a 5-mile radius, there are still only 1,945 residents in the area. Athens and Decatur are the closest population centers but they are located approximately 10 miles from the site. Within a 60-mile radius, there are only two other population centers besides Decatur which have populations exceeding 25,000 or more people. However, Huntsville and Florence are located 29.5 miles and 33.0 miles from the site, respectively.

The area surrounding the site is still primarily agricultural. There are very few industrial areas and recreational areas around the site so that it is not expected that the daytime population will be significantly greater than the residential population. Table 9.3-6 shows the maximum daytime population from estimated residential population within 10 miles from the site. At most, 5,000 people will enter the 10-mile radius in the daytime.

The population data used in the PRA is the residential population data. It is not expected that significantly different results will occur with the use of the daytime population.

9.3.2 Topography and Land Use Data

The 60-mile radius around the site is broken up into grids consisting of radial annuli and sectors. Sixteen sectors were used in the CRAC2 code with the center of sector one pointing due north and the other sectors are numbered clockwise.

CRAC2 requires topographical data input. In particular, it requires that each grid be identified with a particular state and the land area fraction contained in the grid. This information can be obtained by utilizing various maps of the Browns Ferry site and surrounding area. The 60-mile area contains parts of Alabama (State Code 32), Tennessee (State Code 31), and Mississippi (State Code 33). Table 9.3-7 shows the state codes and habitable land fraction for each grid element. Finally, CRAC2 requires agricultural data around the Browns Ferry Nuclear site. This is shown in Table 9.3-8.

9.3.3 Meteorological Data

This section will briefly describe the meteorology in the vicinity of the Browns Ferry site. A more detailed discussion of the site meteorolog can be found in the BFN FSAR.

Sources for assembling a meteorological data file include data collected from (1) the plantsite during January 1, 1977 through December 31, 1979; (2) volunteer weather observation stations in Decatur, Alabama, for the period 1879-1958; and (3) the National Weather Service Station near Huntsville, Alabama.

The Browns Ferry site is adjacent to the Tennessee River and Wheeler Lake. However, lake breeze circulation is not normally detectable at the site area. The terrain around the site is basically flat with scattered 400-to 600-foot foothills and ridges located 20 to 25 miles to the east through south and southwest. Therefore, no local terrain features exist to cause significant meteorological anomalies at the site.

Table 9.3-1

County Population Data near Browns Ferry Site

	Land Area in Sq. Mi.	Year	Population Urban	Population Rural	Population Total	Population Per Sq. Mi
Blount (Ala.)	639	1970	4,390	22,463	26,853	42.0
		1980	5,000	27,800	32,800	
		1990	5,200	29,900	35,100	
		2000	5,300	30,800	36,100	
		2010	5,400	31,600	37,000	
		2020	5,400	32,300	37,700	
Colbert (Ala.)	596	1970	28,850	20,782	49,632	83.3
		1980	34,300	21,700	56,000	
		1990	44,600	22,500	67,100	
		2000	55,100	21,500	76,600	
		2010	67,200	19,300	86,500	
		2020	81,500	15,800	97,300	
Cullman (Ala.)	730	1970	12,601	39,844	52,445	71.8
		1980	16,000	45,700	61,700	
		1990	18,100	47,600	65,700	
		2000	19,500	48,600	68,100	
		2010	20,700	49,000	69,700	
		2020	21,600	49,400	71,000	
Franklin (Ala.)	644	1970	7,814	16,119	23,933	37.2
		1980	10,000	17,400	27,400	
		1990	11,400	19,000	30,400	
		2000	12,700	19,100	31,800	
		2010	14,200	19,400	33,600	
		2020	15,900	19,400	35,300	
Jackson (Ala.)	1,079	1970	12,232	26,970	39,202	36.3
		1980	19,400	28,900	48,300	
		1990	22,400	22,600	45,000	
		2000	26,300	18,400	44,700	
		2010	29,500	15,700	45,200	
		2020	33,400	12,300	45,700	
Lauderdale (Ala.)	662	1970	34,031	34,080	68,111	102.9
		1980	39,700	37,000	76,700	
		1990	50,100	38,500	88,600	
		2000	59,400	38,100	97,500	
		2010	69,600	36,700	106,300	
		2020	80,300	34,500	114,800	

Table 9.3-1 (Continued)

	Land Area in Sq. Mi.	Year	Population Urban	Population Rural	Population Total	Population Per Sq. Mi.
Larence (Ala.)	685	1970	-	27,281	27,281	39.8
		1980	-	28,100	28,100	
		1990	-	31,000	31,000	
		2000	-	32,500	32,500	
		2010	-	33,700	33,700	
		202	-	34,400	34,400	
Limestone (Ala.)	546	1970	14,360	27,339	41,699	76.4
		1980	20,400	30,600	51,000	
		1990	28,700	35,000	63,700	
		2000	37,500	37,500	75,000	
		2010	47,700	39,100	86,800	
		2020	59,000	39,400	98,400	
Madison (Ala.)	803	1970	146,565	39,975	186,540	232.3
		1980	151,100	48,100	199,200	
		1990	195,500	55,400	250,900	
		2000	223,200	61,900	285,100	
		2010	245,700	69,000	314,700	
		2020	265,500	76,400	341,900	
Marion (Ala.)	743	1970	6,241	17,547	23,788	32.0
		1980	7,800	22,100	29,900	
		1990	8,600	23,500	32,100	
		2000	9,200	23,800	33,000	
		2010	9,700	24,000	33,700	
		2020	10,400	24,000	34,400	
Marshall (Ala.)	571	1970	26,318	27,893	54,211	94.9
		1980	37,300	34,700	72,000	
		1990	52,700	42,500	95,200	
		2000	69,700	49,000	118,700	
		2010	90,600	54,900	145,500	
		2020	115,000	59,700	174,700	
Morgan (Ala.)	570	1970	45,399	31,907	77,306	135.6
		1980	55,100	33,200	88,300	
		1990	69,100	35,000	104,100	
		2000	78,900	36,400	115,300	
		2010	88,100	37,700	125,800	
		2020	96,400	39,000	135,400	

Table 9.3-1 (Continued)

	Land Area in Sq. Mi.	Year	Population Urban	Population Rural	Population Total	Population Per Sq. Mi.
Walker (Ala.)	805	1970	13,548	42,698	56,246	69.9
		1980	19,700	59,100	78,800	
		1990	25,300	72,100	97,400	
		2000	28,100	75,300	103,400	
		2010	30,600	77,700	108,300	
		2020	32,500	77,700	110,200	
Winston (Ala.)	615	1970	4,190	12,464	16,654	27.1
		1980	5,500	15,600	21,100	
		1990	5,900	16,700	22,600	
		2000	6,300	17,100	23,400	
		2010	6,800	17,200	24,000	
		2020	7,200	17,300	24,500	
Tishomingo (Miss.)	443	1970	-	14,940	14,940	33.7
		1980	-	15,700	15,700	
		1990	-	16,900	16,900	
		2000	-	17,400	17,400	
		2010	-	17,900	17,900	
		2020	-	18,200	18,200	
Bedford (Tenn.)	482	1970	12,262	12,777	25,039	51.9
		1980	14,200	12,900	27,100	
		1990	17,100	13,900	31,000	
		2000	19,100	14,900	34,000	
		2010	21,100	15,300	36,400	
		2020	22,700	15,600	38,300	
Franklin (Tenn.)	553	1970	5,256	22,033	27,289	49.3
		1980	6,200	22,800	29,000	
		1990	7,700	24,800	32,500	
		2000	8,900	26,100	35,000	
		2010	9,900	27,400	37,300	
		2020	11,000	28,600	39,600	
Giles (Tenn.)	619	1970	6,989	15,149	22,138	35.8
		1980	7,600	15,600	23,200	
		1990	9,000	17,100	26,100	
		2000	9,800	18,600	28,400	
		2010	10,500	19,800	30,300	
		2020	11,000	20,900	31,900	

Table 9.3-1 (Continued)

	Land Area in Sq. Mi.	Year	Population Urban	Population Rural	Population Total	Population Per Sq. Mi.
Hardin (Tenn.)	587	1970	5,576	12,636	18,212	31.0
		1980	6,200	15,800	22,000	
		1990	6,800	18,900	25,700	
		2000	7,400	19,800	27,200	
		2010	8,000	20,500	28,500	
		2020	8,600	20,900	29,500	
Lawrence (Tenn.)	634	1970	8,889	20,208	29,097	45.9
		1980	11,600	21,500	33,100	
		1990	12,600	22,000	34,600	
		2000	13,600	22,300	35,900	
		2010	14,400	22,600	37,000	
		2020	15,300	22,800	38,100	
Lewis (Tenn.)	285	1970	3,385	3,376	6,761	23,7
		1980	4,800	3,600	8,400	
		1990	6,200	3,700	9,900	
		2000	7,700	3,100	10,800	
		2010	9,100	2,500	11,600	
		2020	10,500	1,700	12,200	
Lincoln (Tenn.)	580	1970	7,030	17,288	24,318	41.9
		1980	7,400	19,300	26,700	
		1990	7,700	20,800	28,500	
		2000	8,000	21,500	29,500	
		2010	8,300	22,100	30,400	
		2020	8,600	22,600	31,200	
Marshall (Tenn.)	377	1970	7,207	10,112	17,319	45.9
		1980	8,900	10,500	19,400	
		1990	10,100	10,900	21,000	
		2000	11,500	11,200	22,700	
		2010	12,600	11,500	24,100	
		2020	13,600	11,400	25,000	
Maury (Tenn.)	614	1970	25,001	19,027	44,028	71.7
		1980	29,300	18,800	48,100	
		1990	36,100	19,000	55,100	
		2000	41,200	19,400	60,600	
		2010	46,200	19,700	65,700	
		2020	49,500	20,200	69,700	

Table 9.3-1 (Continued)

	Land Area in Sq. Mi.	Year	Population Urban	Population Rural	Population Total	Population Per Sq. Mi.
Moore (Tenn.)	124	1970	-	3,568	3,568	28.8
		1980	-	3,400	3,400	
		1990	-	3,600	3,600	
		2000	-	3,700	3,700	
		2010	-	3,800	3,800	
		2020	-	3,900	3,900	
Wayne (Tenn.)	739	1970	-	12,365	12,365	16.7
		1980	-	13,500	13,500	
		1990	-	14,800	14,800	
		2000	-	15,300	15,300	
		2010	-	15,700	15,700	
		2020	-	16,100	16,100	

Table 9.3-2

1960 and 1970 Population of All Incorporated Places in 1970
Within 60-Mile Radius of Browns Ferry Site

Town	County*	Direction	Miles	Population 1960	Population 1970
			0-10		
Trinity	Morgan	S	7.0	454	881
Hillsboro	Lawrence	SW	6.2	218	222
				72	1,103
			10-20		
Athens	Limestone	NE	10.0	9,330	14,360
Elkmont	Limestone	NNE	16.6	169	394
Mooresville	Limestone	ESE	13.8	93	72
Decatur	Morgan	SE	10.0	29,217	38,044
Flint City	Morgan	SE & SSE	15.3	432	404
Moulton	Lawrence	SW & SSW	18.9	1,716	2,470
Courtland	Lawrence	W & WSW	11.5	495	547
Town Creek	Lawrence	W	17.0	810	1,203
Rogersville	Lauderdale	NW	13.0	766	950
			Total	43,028	58,444
			20-30		
Lester	Limeston	N	20.0	-	70**
Minor Hill	Giles (T)	N	24.0	-	315**
Elkton	Giles (T)	NNE	27.0	199	341
Ardmore	Giles (T) and Limestone	NE	25.5	634	1,362
Huntsville	Madison	E	29.5	72,365	139,282
Madison	Madison	E	20.0	1,435	3,086
Triana	Madison	ESE	23.8	-	228**
Hartselle	Morgan	SSE	21.0	5,000	7,355
Somerville	Morgan	SE	23.4	166	185
Falkville	Morgan	SE	26.0	682	946
Leighton	Colbert	W	24.0	1,158	1,231
Killen	Lauderdale	WNW	26.7	620	683
Lexington	Lauderdale	NW	23.0	315	278
			Total	82,574	155,362

Table 9.3-2 (Continued)

Town	County*	Direction	Miles	Population 1960	Population 1970
			30-40		
Pulaski	Giles (T)	N	34.0	6,616	6,989
Lawrenceburg	Lawrence (T)	NNW	39.0	8,042	8,889
Owens Crossroads	Madison	ESE	37.5	-	767**
Eva	Morgan	SE	32.0	-	146**
Vinemont	Cullman	SSE	33.2	-	480**
Cullman	Cullman	SSE	40.0	10,883	12,601
Addison	Winston	S	35.5	343	692
Muscle Shoals	Colbert	W	31.0	4,084	6,907
Sheffield	Colbert	W	33.4	13,491	13,115
Tuscumbia	Colbert	W	34.0	8,994	8,828
Littleville	Colbert	WSW	34.3	460	858
Russelville	Franklin	WSW	38.3	6,628	7,814
Florence	Lauderdale	W & WNW	33.0	31,649	34,031
Loretto	Lawrence (T)	NW	31.8	929	1,375
St. Joseph	Lawrence (T)	NW	32.3	547	637
Iron City	Lawrence (T)	NW	34.0	-	504**
			Total	92,666	104,633
			40-50		
Lynnville	Giles (T)	N	46.4	362	327
Cornersville	Marshall (T)	NNE	46.5	314	655
Fayetteville	Lincoln (T)	NE	43.0	6,804	7,030
Petersburg	Lincoln (T) and Marshall (T)	NNE	49.2	423	463
Gurley	Madison	E	41.0	-	647**
New Hope	Madison	ESE	41.8	953	1,300
Paint Rock	Jackson	E	44.1	264	226
Woodville	Jackson	E	47.4	196	322
Grant	Marshall	ESE	49.2	274	382
Arab	Marshall	SE	43.2	2,989	4,399
Union Grove	Marshall	ESE	44.2	-	118**
Fairview	Cullman	SE	40.2	-	313**
Holly Pond	Cullman	SE	46.2	193	325
Hanceville	Cullman	SSE	47.8	1,174	2,027
Good Hope	Cullman	SSE	44.4	-	840**
Arley	Winston	S	45.0	-	164**
Double Springs	Winston	SSW	42.8	811	957
Haleyville	Winston	SW	45.0	3,740	4,190
Phil Campbell	Franklin	SW	42.5	898	1,230
Bear Creek	Marion	SW	46.2	243	336
Cherokee	Colbert	W	49.2	1,349	1,484
Collinwood	Wayne (T)	NW	48.0	596	922
			Total	21,583	28,657

Table 9.3-2 (Continued)

Town	County*	Direction	Miles	Population 1960	Population 1970
			50-60		
Lewisburg	Marshall (T)	NNE	54.0	6,338	7,207
Mount Pleasant	Maury (T)	N	57.2	2,921	3,530
Huntland	Franklin (T)	ENE	52.8	500	849
Lynchburg	Moore (T)	NE	56.9	396	538
Guntersville	Marshall	ESE	51.5	6,592	6,491
Albertville	Marshall	ESE	59.5	8,250	9,963
Garden City	Culman	SSE	52.0	536	745
Blountsville	Blount	SE	52.1	672	1,254
Cleveland	Blount	SSE	58.0	-	413**
Snead	Blount	SE	59.5	-	347**
Hodges	Franklin	WSW	54.0	194	207
Vina	Franklin	WSW	59.0	184	366
Hackleburg	Marion	SW	51.6	527	726
Brilliant	Marion	SW	60.0	749	726
Nauvoo	Walker	SSW	54.5	318	265
Lynn	Winston	SSW	52.6	531	286
Waterloo	Lauderdale	WNW	56.3	215	262
Waynesboro	Wayne (T)	NW	56.0	1,343	1,983
			Total	30,453	36,353

*All counties are in Alabama except those Tennessee counties noted by (T).
**Place incorporated since 1960.

Source: U.S. Bureau of the Census. U.S. Census of Population: 1970. Number of Inhabitants.

Table 9.3-3

Cities And Towns Within 60 Miles Having 2,500 or More Residents
Near Browns Ferry Site

	County	1970	1980	1990	2000	2010	202
Alabama							
Albertville	Marshall	9,963	13,300	17,800	22,500	28,400	35
Arab	Marshall	4,399	8,500	14,500	21,700	30,700	41
Athens	Limestone	14,360	20,400	28,700	37,500	47,700	59
Cullman	Cullman	12,601	16,000	18,100	19,500	20,700	21
Decatur	Morgan	38,044	46,300	58,500	65,300	72,600	79
Florence	Lauderdale	34,031	39,700	50,100	59,400	69,600	80
Guntersville	Marshall	6,491	8,000	10,100	12,300	14,800	17
Haleyville	Winston	4,190	5,500	5,900	6,300	6,800	7
Hartselle	Morgan	7,355	8,800	10,600	13,600	15,500	17
Huntsville	Madison	139,282	147,000	190,400	217,100	238,700	257
Madison	Madison	3,086	4,100	5,100	6,100	7,000	8
Muscle Shoals	Colbert	6,907	11,700	20,900	30,700	42,100	55
Russelville	Franklin	7,814	10,000	11,400	12,700	14,200	15
Sheffield	Colbert	13,115	13,500	14,000	14,500	15,000	15
Tuscumbia	Colbert	8,828	9,100	9,700	9,900	10,100	10
Tennessee							
Fayetteville	Lincoln	7,030	7,400	7,700	8,000	8,300	8
Lawrenceburg	Lawrence	8,889	11,600	12,600	13,600	14,400	15
Lewisburg	Marshall	7,207	8,900	10,100	11,500	12,600	13
Mount Pleasant	Maury	3,530	3,800	4,200	4,600	5,000	5
Pulaski	Giles	6,989	7,600	9,000	9,800	10,500	11

Table 9.3-4

Browns Ferry 1980 Population Distribution
Within 10-Miles of the Site

	Total Population	0-1	1-2	2-3	3-4	4-5	5-10
N	820	---	10	50	35	80	645
NNE	1,010	---	5	15	60	55	875
NE	5,175	---	5	30	50	80	5,010
ENE	2,060	---	20	70	55	100	1,815
E	1,435	---	---	45	15	55	1,320
ESE	235	---	---	5	---	---	230
SE	11,245	---	---	---	---	20	11,225
SSE	2,520	---	---	---	---	50	2,470
S	1,455	---	---	25	35	90	1,305
SSW	1,200	---	---	60	80	170	890
SW	860	---	---	25	40	95	700
WSW	495	---	---	35	15	140	305
W	685	---	---	25	5	30	625
WNW	130	---	---	---	25	55	50
NW	345	---	---	---	---	5	340
NNW	685	---	5	35	20	20	605
Total	30,355	---	45	420	435	1,045	28,410

Table 9.3-5

Browns Ferry 1980 Population Distribution
Within 60-Miles of the Site

	Total Population	0-10	10-20	20-30	30-40	40-50	50-60
N	46,435	820	1,635	2,605	11,460	5,970	23,945
NNE	12,515	1,010	3,900	2,385	3,255	1,265	700
NE	55,670	5,175	17,740	8,065	6,440	13,330	4,920
ENE	46,970	2,060	6,065	12,225	17,105	5,670	3,845
E	168,185	1,435	2,145	77,390	77,680	4,735	4,800
ESE	48,460	235	2,240	2,665	8,265	12,095	22,960
SE	91,230	11,245	34,400	5,045	6,645	18,935	14,960
SSE	71,140	2,520	9,925	12,855	18,595	22,305	4,940
S	40,510	1,455	4,010	1,900	5,565	9,660	17,920
SSW	23,055	1,200	6,145	1,305	1,840	2,700	9,865
SW	23,075	860	3,140	2,265	3,150	8,760	4,900
WSW	28,390	495	3,115	3,080	13,650	3,770	4,280
W	59,880	685	2,940	7,750	40,615	4,985	2,905
WNW	63,690	130	905	10,500	44,435	6,025	1,695
NW	26,735	345	4,975	6,055	5,905	3,620	5,835
NNW	32,100	685	2,290	2,475	15,260	8,155	3,235
Total	838,040	30,355	105,570	158,565	279,865	131,980	131,705

Table 9.3-6

Maximum Daytime Population Variation From Estimated Residential Population
(Ref. BFN FSAR Table 2.2-7)

Miles from Site	Estimated Maximum Variation*
1	-
2	500
3	1500
4	2500
5	3500
7	4000
10	5000

*The numbers given show cumulative variations in the daytime population measured outward from the site. Employment at Browns Ferry is excluded.

Table 9.3-7

State Code and Habitable Land Fraction For Each Area Element
at Browns Ferry Site

ector	State Code and Land Fraction																									
iterval-	1.0		2.0		3.0		4.0		5.0		10.0		20.0		30.0		40.0		50.0		60.0 mi.	
1	32	1.0	32	1.0	32	1.0	32	1.0	32	1.0	32	0.8	32	0.9	31	1.0	31	1.0	31	1.0	32	1.0
2	32	1.0	32	1.0	32	1.0	32	1.0	32	1.0	32	1.0	32	1.0	31	1.0	31	1.0	31	1.0	31	1.0
3	32	1.0	32	1.0	32	1.0	32	1.0	32	1.0	32	1.0	32	1.0	32	1.0	31	1.0	31	1.0	31	0.8
4	32	1.0	32	1.0	32	1.0	31	1.0	32	1.0	32	1.0	32	1.0	32	1.0	32	1.0	32	1.0	31	1.0
5	32	1.0	32	1.0	32	1.0	32	0.8	32	0.9	32	0.9	32	1.0	32	0.9	32	1.0	32	1.0	32	0.9
6	32	0.9	32	0.7	32	0.8	32	0.1	32	0.1	32	0.2	32	0.6	32	0.9	32	0.9	32	0.9	32	0.7
7	32	0.0	32	0.2	32	0.0	32	0.0	32	0.3	32	0.5	32	0.6	32	1.0	32	1.0	32	1.0	32	1.0
8	32	0.0	32	0.0	32	0.0	32	0.0	32	0.3	32	1.0	32	1.0	32	1.0	32	1.0	32	0.9	32	1.0
9	32	0.0	32	0.1	32	0.2	32	0.6	32	1.0	32	1.0	32	1.0	32	1.0	32	0.9	32	0.7	32	0.9
10	32	0.0	32	0.2	32	0.8	32	0.9	32	1.0	32	1.0	32	1.0	32	1.0	32	0.9	32	0.9	32	0.9
11	32	0.0	32	0.8	32	0.9	32	1.0	32	1.0	32	1.0	32	1.0	32	1.0	32	1.0	32	1.0	32	1.0
12	32	0.0	32	0.7	32	1.0	32	1.0	32	1.0	32	1.0	32	1.0	32	1.0	32	1.0	32	1.0	32	1.0
13	32	0.0	32	0.8	32	0.9	32	1.0	32	1.0	32	0.9	32	1.0	32	1.0	32	0.9	32	0.9	33	0.9
14	32	0.0	32	0.0	32	0.2	32	0.7	32	0.8	32	0.4	32	0.6	32	0.6	32	0.9	32	1.0	31	0.8
15	32	0.0	32	0.0	32	0.1	32	0.2	32	0.3	32	0.5	32	1.0	32	1.0	31	1.0	31	1.0	31	1.0
16	32	0.5	32	0.3	32	0.3	31	1.0	32	1.0	32	0.8	32	1.0	31	1.0	31	1.0	31	1.0	31	1.0

Table 9.3-8

Agricultural Data Around Browns Ferry Site

State	Seeding Month	Harvesting Month	Farm Land Fraction	Dairy Prod. Fraction	Annual Sales ($/acre)	Val Farm
Tennessee	4	10	0.507	0.140	118.00	66
Alabama	4	10	0.400	0.041	144.00	51
Mississippi	4	10	0.475	0.047	135.00	52

Reference: NUREG/CR-2326, CRAC2 Computer Code User's Guide.

Table 9.3-9

Radionuclide Core Inventory at BFN Unit-1

Number	Nuclide	Group	Parent	Initial Inventory (Ci)*	Half-Life (Day)
1	CO-58	7		5.036E+05	7.130E+01
2	CO-60	7		6.029E+05	1.921E+03
3	KR-85	1		7.862E+05	3.919E+03
4	KR-85M	1		2.133E+07	1.867E-01
5	KR-87	1		4.106E+07	5.278E-02
6	KR-88	1		5.839E+07	1.167E-01
7	RB-86	4		1.218E+05	1.865E+01
8	SR-89	6		7.632E+07	5.200E+01
9	SR-90	6		6.401E+06	1.026E+04
10	SR-91	6		9.750E+07	3.950E+01
11	Y-90	8	SR-90	6.405E+06	2.670E+00
12	Y-91	8	SR-91	1.006E+08	5.880E+01
13	ZR-95	8		1.347E+08	6.550E+01
14	ZR-97	8		1.376E+08	7.000E-01
15	NB-95	8	ZR-95	1.387E+08	3.510E+01
16	MO-99	7		1.514E+08	2.751E+00
17	TC-99M	7	MO-99	1.327E+08	2.508E-01
18	RU-103	7		1.256E+08	3.959E+01
19	RU-105	7		8.680E+07	1.850E-01
20	RU-106	7		4.185E+07	3.690E+02
21	RH-105	7	RU-105	8.024E+07	1.479E+00
22	SB-127	5		8.864E+06	3.800E+00
23	SB-129	5		2.621E+07	1.808E-01
24	TE-127	5	SB-127	8.645E+06	3.896E-01
25	TE-127M	5		1.129E+06	1.090E+02
26	TE-129	5	SB-129	2.581E+07	4.861E-02
27	TE-129M	5		3.905E+06	3.340E+01
28	TE-131M	5		1.191E+07	1.250E+00
29	TE-132	5		1.169E+08	3.250E+00
30	I-131	3	TE-131M	8.184E+07	8.040E+00
31	I-132	3	TE-132	1.190E+08	9.521E-02
32	I-133	3		1.672E+08	8.667E-01
33	I-134	3		1.830E+09	3.653E-02
34	I-135	3		1.565E+08	2.744E-01
35	XE-133	1	I-133	1.639E+08	5.290E+00
36	XE-135	1	I-135	4.647E+07	3.821E-01
37	CS-134	4		1.067E+07	7.524E+02
38	CS-136	4		3.665E+06	1.300E+01
39	CS-137	4		8.631E+06	1.099E+04
40	BA-140	6		1.439E+08	1.279E+01
41	LA-140	8	BA-140	1.488E+08	1.676E+00

Table 9.3-9 (Continued)

Number	Nuclide	Group	Parent	Initial Inventory (Ci)*	Half-Life (Day)
42	CE-141	8		1.373E+08	3.253E+01
43	CE-143	8		1.263E+08	1.375E+00
44	CE-144	8		9.791E+07	2.844E+02
45	PR-143	8	CE-143	1.240E+08	1.358E+01
46	ND-147	8		5.464E+07	1.099E+01
47	NP-239	8		1.778E+09	2.350E+00
48	PU-238	8	CM-242	1.578E+05	3.251E+04
49	PU-239	8	NP-239	3.384E+04	8.912E+06
50	PU-240	8	CM-244	4.254E+04	2.469E+06
51	PU-241	8		1.001E+07	5.333E+03
52	AM-241	8	PU-241	9.991E+03	1.581E+05
53	CM-242	8		3.156E+06	1.630E+02
54	CM-244	8		1.852E+05	6.611E+03

*Core inventory is calculated from Table 7.3.3-1, which was provided by Chuck Weber at Oak Ridge National Laboratory.

Table 9.3-10

Radiation Shielding Factors and Breathing Rates

Cloud Shielding - Stationary People	7.500E-01
Cloud Shielding - Moving Evacuees	1.000E+00
Cloud Shielding - Sheltering	5.000E-01
Cloud Shielding - No Emergency Action	7.500E-01
Ground Sheilding - Stationary People	3.300E-01
Ground Shielding - Moving Evacuees	5.000E-01
Ground Shielding - Sheltering	8.000E-02
Ground Shielding - No Emergency Action	3.300E-01
Breathing Rate Stationary Evacuees*	2.660E-04
Breathing Rate Moving Evacuees*	2.660E-04
Breathing Rate Sheltering Region One*	1.330E-04
Breathing Rate Sheltering Region Two*	2.660E-04

*Unit is cubic meters per second.

Table 9.3-11

Economic Data For CRAC2 Code

Evacuation Cost ($/person)	100
Decontamination Cost of Farm Fields ($/Acre)	499
Decontamination Cost of Residential, Business, Public Ares	3,349
Compensation Rate	0.20
Value of Residential, Business, and Public Area	31,530
Relocation Cost ($/Person)	4,344
Cost of Milk Consumption ($/Person)	135
Cost of Non-Dairy Products Consumed ($/Person)	685

Reference: NUREG/CR-2326, CRAC2 Computer Code User's Guide.

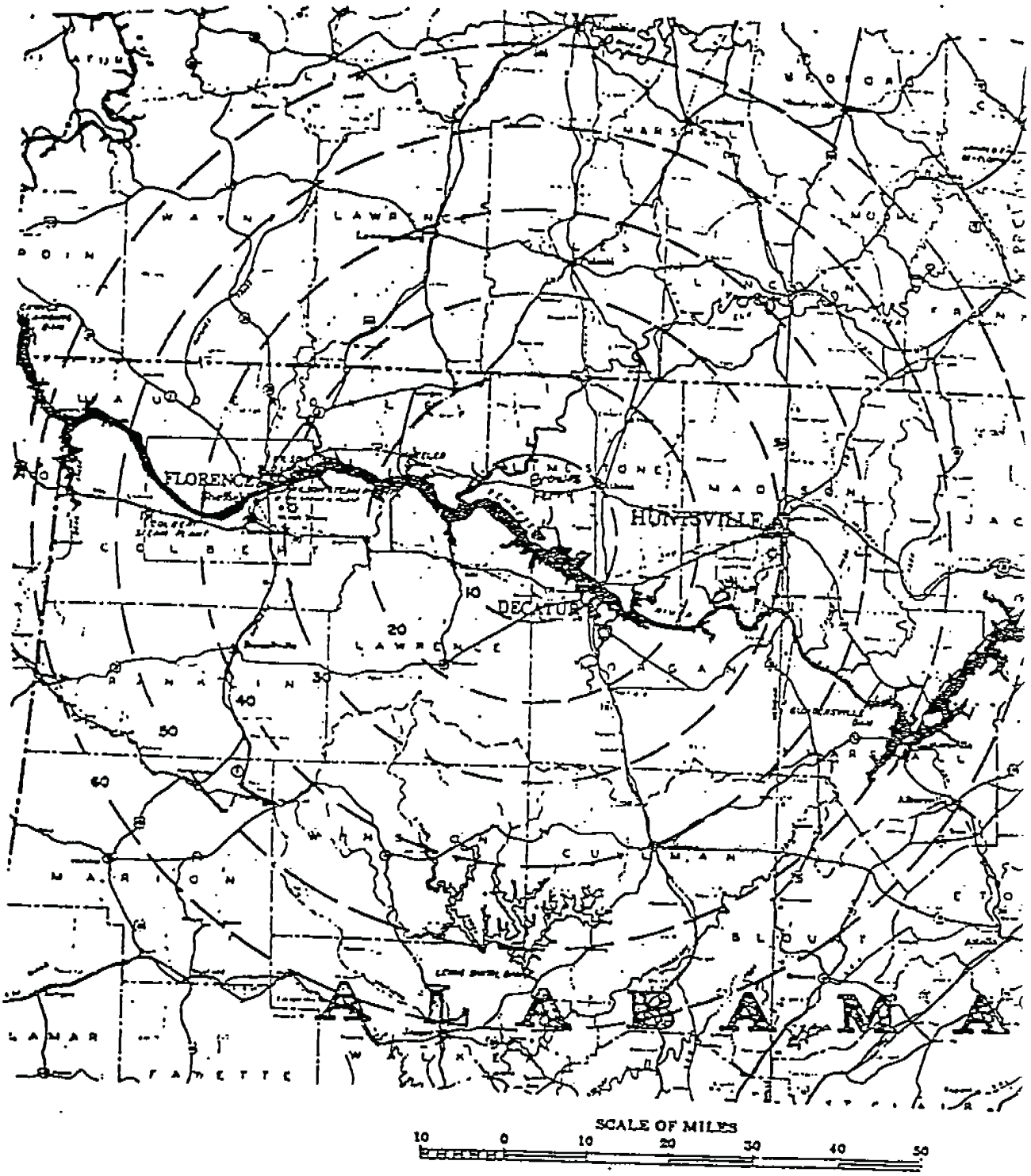


Figure 9.3-1 Browns Ferry Site Location Map

– 60 Miles Radius

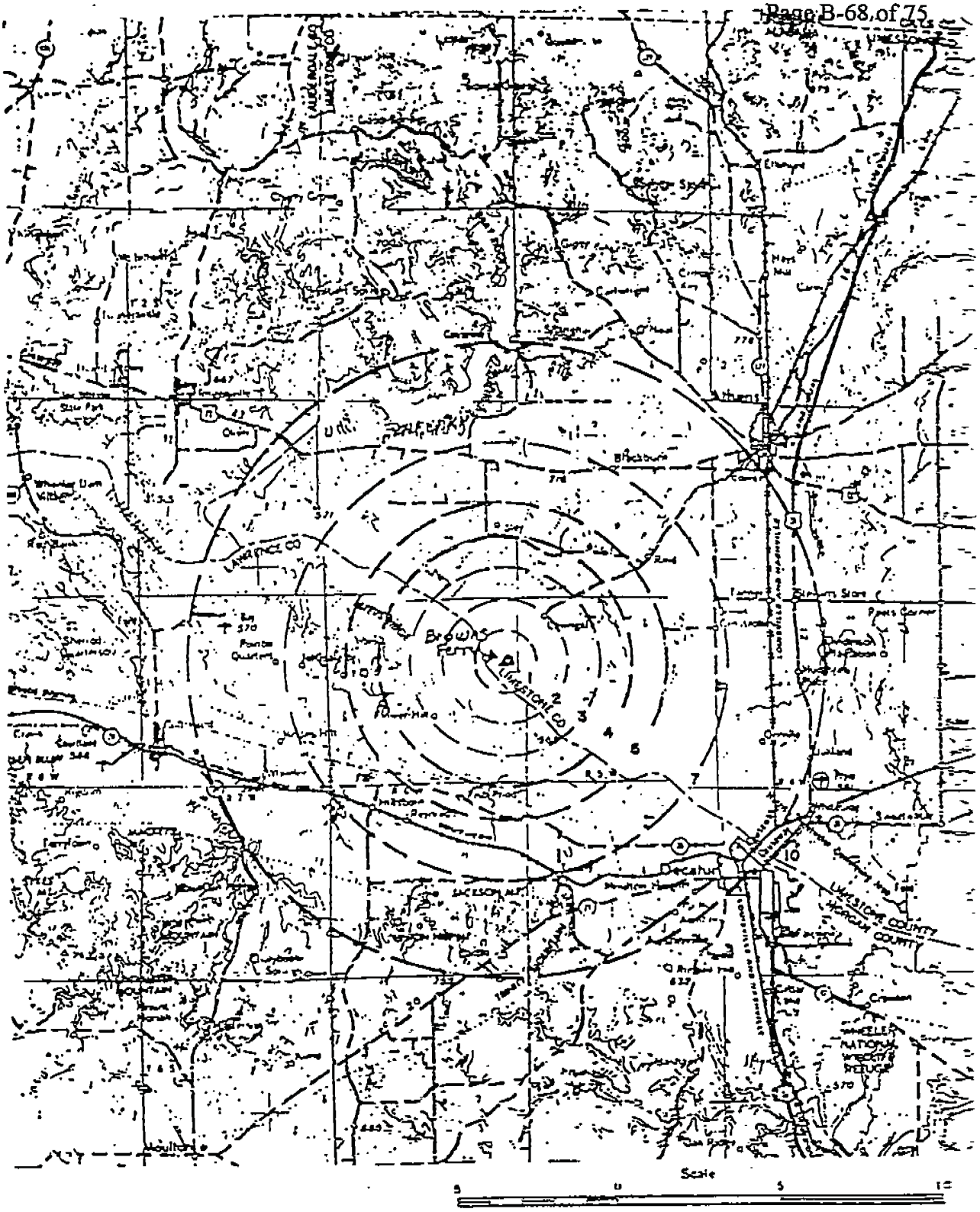


Figure 9.3-2 Browns Ferry Site Location Map

- 10 Miles Radius

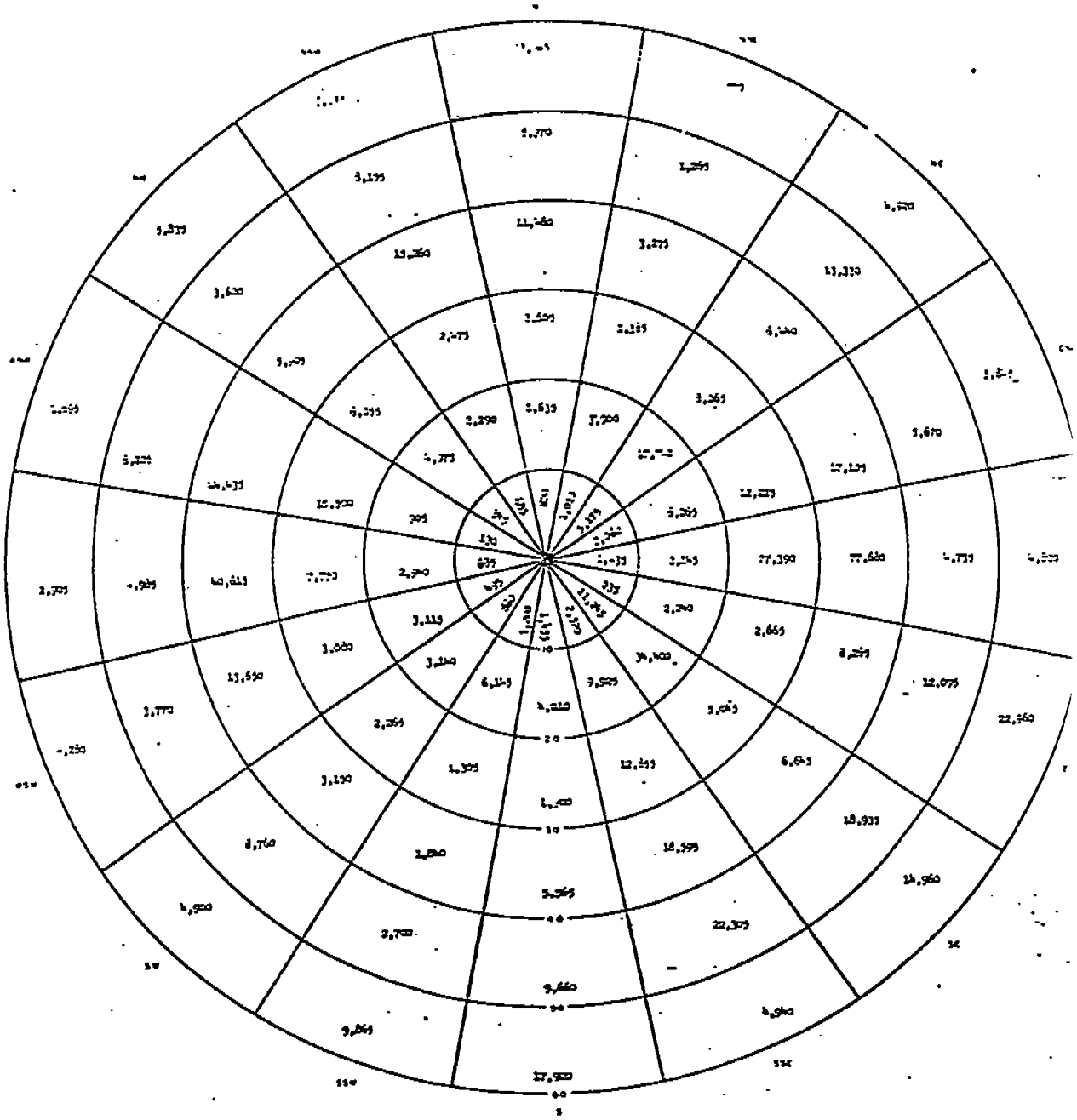


Figure 9.3-3 Population Distribution Within 60 Miles of Browns Ferry Site - 1980

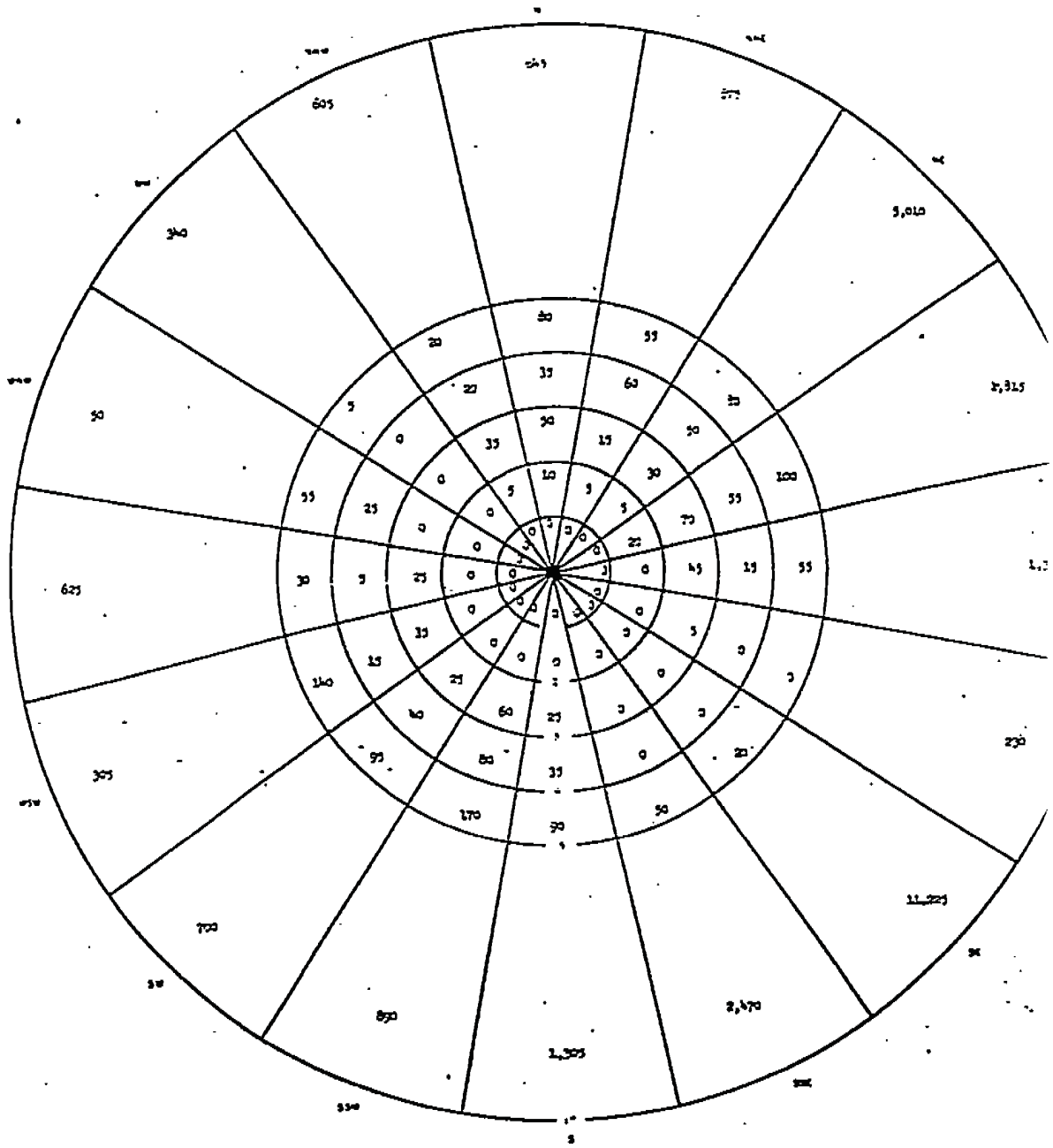


Figure 9.3-4 Population Distribution Within 10 Miles of Browns Ferry Site - 1980

9.4 Results of Consequence Analysis

The results of the consequence analysis are presented as a set of CCDFs, two (early fatalities and latent fatalities) for each release category. Those CCDFs are presented in Chapter 10.

TABLE 9.4-1

SUMMARY TABLE OF ACUTE FATALITY

STATE	MEAN	PEAK	P(PEAK)*
1A	3.24E-02	1.06E+02	9.40E-06
1J	2.75E-02	1.96E+02	1.17E-05
1L	3.22E-01	2.62E+02	1.17E-05
2A	1.69E+00	2.46E+03	2.94E-04
2C	7.88E-03	6.46E+01	9.40E-06
2J	5.16E-01	3.29E+02	2.94E-04
2L	4.72E+01	1.10E+04	2.34E-04
5A	1.99E-01	2.10E+02	2.94E-04
5J	4.16E-02	2.36E+02	1.17E-05
5L	2.31E+00	3.41E+03	2.94E-04
6A	2.20E-01	2.26E+02	2.94E-04
6J	2.66E-01	3.06E+02	1.17E-05
6L	6.01E+00	5.70E+03	2.94E-04
7J	0.	0.	0.
7L	0.	0.	0.
8J	0.	0.	0.
8L	0.	0.	0.
9A	2.21E-03	1.20E+01	9.40E-06
10A	1.28E+00	1.81E+03	2.94E-04
10C	2.00E+00	3.14E+03	2.94E-04
10L	1.75E+00	2.59E+03	2.94E-04
13A	0.	0.	0.
13J	6.81E-03	8.60E+01	9.40E-06
13L	1.37E-02	1.50E+02	1.17E-05
15J	0.	0.	0.
15L	0.	0.	0.

*Probability associated with peak value.

TABLE 9.4-2
SUMMARY TABLE OF ACUTE INJURY

STATE	MEAN	PEAK	P(PEAK)*
1A	5.24E+01	7.79E+03	2.94E-04
1J	6.06E+01	6.70E+03	2.94E-04
1L	1.35E+02	8.86E+03	2.94E-04
2A	1.27E+02	9.30E+03	2.94E-04
2C	4.85E+01	7.10E+03	2.94E-04
2J	1.77E+02	1.03E+04	2.94E-04
2L	6.52E+02	1.01E+04	2.30E-04
5A	7.56E+01	8.61E+03	2.94E-04
5J	8.06E+01	8.52E+03	2.94E-04
5L	1.86E+02	9.52E+03	2.34E-04
6A	7.66E+01	8.58E+03	2.94E-04
6J	1.44E+02	9.58E+03	2.94E-04
6L	3.34E+02	1.09E+04	2.94E-04
7J	0. 0.	0.	
7L	0. 0.	0.	
8J	0. 0.	0.	
8L	0. 0.	0.	
9A	2.24E+01	4.67E+03	2.94E-04
10A	9.33E+01	7.69E+03	2.34E-04
10C	1.57E+02	9.36E+03	2.34E-04
10L	1.67E+02	9.40E+03	2.34E-04
13A	3.2E1-04	5.98E+00	9.40E-06
13J	3.42E+01	6.08E+03	2.94E-04
13L	4.14E+01	6.37E+03	2.94E-04
15J	0. 0.	0.	
15L	0. 0.	0.	

*Probability associated with peak value.

TABLE 9.4-3
SUMMARY TABLE OF TOTAL LATENT EFFECT
DUE TO EARLY AND CHRONIC EXPOSURES

STATE	MEAN	PEAK	P(PEAK)*
1A	3.58E+02	1.56E+03	1.12E-05
1J	3.92E+02	1.51E+03	1.26E-05
1L	3.67E+02	1.53E+03	1.83E-04
2A	4.48E+02	2.35E+03	1.12E-05
2C	4.92E+02	2.36E+03	1.12E-05
2J	5.05E+02	2.39E+03	1.12E-05
2L	4.81E+02	2.51E+03	1.26E-05
5A	3.70E+02	1.69E+03	1.12E-05
5J	3.90E+02	1.62E+03	1.26E-05
5L	3.75E+02	1.63E+03	1.26E-05
6A	3.65E+02	1.67E+03	1.12E-05
6J	4.33E+02	1.71E+03	1.26E-05
6L	4.37E+02	1.88E+03	1.12E-05
7J	1.39E+00	9.46E+00	3.14E-04
7L	3.80E+01	5.28E+02	1.83E-04
8J	6.15E-01	4.23E+00	3.14E-04
8L	7.85E+01	7.92E+02	1.83E-04
9A	3.22E+02	1.59E+03	1.26E-05
10A	3.73E+02	2.35E+03	1.26E-05
10C	4.48E+02	2.27E+03	1.12E-05
10L	4.76E+02	2.33E+03	8.85E-04
13A	2.56E+02	1.09E+03	0.
13J	3.71E+02	1.55E+03	1.26E-05
13L	3.25E+02	1.39E+03	1.26E-05
15J	7.55E-01	5.36E+00	1.12E-05
15L	3.34E+01	4.86E+02	1.63E-04

*Probability associated with peak value.

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LEVEL 3 CONSEQUENCE ASSESSMENT USING GE UPRATED FUEL

FOR

BROWNS FERRY NUCLEAR (SAMA)

Revision 2

January 2002

Prepared by ABS Consulting

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LEVEL 3 CONSEQUENCE ASSESSMENT FOR BROWNS FERRY NUCLEAR (SAMA)

1.0 SUMMARY

A Level 3 consequence assessment update has been completed for Browns Ferry Nuclear (BFN) Units 2 and 3 using the most recent version of the MACCS computer code referred to as MACCS2 V1.12 (MELCOR Accident Consequence Code System).[1] The MACCS2 V1.12 code was developed by Sandia National Laboratories for the NRC (and DOE) and follows a methodology similar to that of its predecessor, the CRAC2[2] code used for the Level 3 analysis in the BFN PRA conducted in 1982. The original version of MACCS was used in the NUREG-1150 degraded core calculations [3]. Definition of source terms was based on the MAAP (Modular Accident Analysis Program)[4] code runs that were completed during the IPE assessment reported in 1992. The 1980 site tower weather data was used to represent weather conditions at the site. All other site data was updated and extrapolated as appropriate to be representative of the year 2036.

2.0 INTRODUCTION

In a probabilistic risk assessment of a nuclear power plant, the ultimate risk is expressed in terms of the health effects and economic impacts that a potential reactor accident would have on the surrounding population. For a particular nuclear plant site, the consequences depend on local meteorological conditions, population distribution, and nature of land usage as well as on the magnitude and characteristics of the radioactive release during the accident. This report describes the basic elements of the consequence analysis, site-specific information around Browns Ferry Nuclear Power Plant, and results of the consequence analysis. Because the results of this analysis are designed to be input into the SAMA economic model, the report focuses on the economic impacts rather than the health impacts.

Each of the major hypothetical accidents identified in the IPE Level 2 study [5] was assigned to one of several release categories based on the primary system and containment responses to the accident conditions calculated by the MAAP code [4]. Each release category has associated release fractions of the initial core radionuclide inventory, which are used as input data to the consequence analysis model.

Assuming that an accident can occur at any given time, there are various factors that would influence the accident consequences. One of the most important factors is the atmospheric dispersion, which is computed based on local meteorological conditions that exist at the time of accident. The meteorological data includes wind direction, wind speed, atmospheric stability (turbulence), and rainfall intensity. The atmospheric dispersion model used in this study is a standard Gaussian dispersion model that accounts for changes in wind speed and precipitation as a function of time after the accident. Along with the atmospheric dispersion model, the dry and wet deposition processes are modeled to determine the air contamination and ground contamination along the plume pathway. The potential radiation dose accumulation is computed from cloud shine, ground shine, inhalation of radioactive material, and ingestion of contaminated food and milk. Evacuation and sheltering of the population, as well as land and food interdiction, are used to mitigate early and latent health effects.

The results of the consequence analysis are presented in the form of complementary cumulative distribution functions (CCDFs). These distributions show the probabilities and magnitudes for various consequences such as early fatalities. The probabilities in a CCDF are presented as conditional probabilities. The conditional probability used in the context of this report is defined as the probability that a consequence of a certain magnitude will occur given that in-plant events leading to the particular ex-plant release under study has occurred. These CCDFs are utilized to generate the overall risk curves when the plant systems and containment failure probabilities are incorporated.

3.0 CONSEQUENCE ANALYSIS METHODOLOGY AND INPUT ASSUMPTIONS

The mathematical and statistical models used in MACCS2 V1.12 are briefly discussed below along with assumptions used to develop input data.

3.1 Released Radioactive Material

During the IPE Level 2 assessment, several MAAP runs were made to characterize potential releases. These release categories have associated probabilities of occurrence and magnitudes of radioactive material release for several groups of isotopes. Releases are given in terms of the fraction of the initial core radioactive inventory. Tennessee Valley Authority Nuclear (TVAN) (11) provided the initial reactor core fission product inventory. The available data set for the GE Uprated fuel and the other two fuel types contained data for more than 650 isotopes, although the set of isotopes included was not the same for each fuel type. MACCS2 allows a maximum of 150 isotopes. The group of isotopes included was determined by first eliminating the isotopes with no dose factors available in the MACCS2 825-isotope data file, then eliminating isotopes that were not available for all three fuel types, and finally eliminating the isotopes that had the lowest activity after 30 minutes of decay. The final list of 150 isotopes includes more than 99% of the total fission product activity. The list of the 150 isotopes used in the analysis and their inventories at 100% power level is shown in Table 1.

In addition to the release magnitude, the parameters that characterize the various releases due to hypothetical accident sequences are time of release, duration of release, warning time for evacuation, height of release, and energy content of the released radioactive plume.

The time of start of release was taken from MAAP runs and refers to the time interval between the start of the hypothetical accident and the release of radioactive material from the containment building to the atmosphere. This parameter is used to calculate the decay of radioactivity as well as timing used in computing dose accumulated by evacuees in relation to plume location and deposited material. The duration of release is the total time during which radioactive material is emitted into the atmosphere; it is used to account for continuous releases by adjusting for horizontal dispersion due to changes in wind direction.

For this analysis, 95% of the population was assumed to evacuate, and the remainder were assumed to remain in place. The analysis further assumed that people who had not evacuated would be relocated when the total effective dose commitment to an individual exceeded the threshold of .25 Sieverts. Finally, the height of release and the energy content of the released plume affect the manner in which the plume would be dispersed in the atmosphere. Because this information could not be determined from the MAAP release files, the release was conservatively assumed to be at ground level with no heat energy to give plume rise. Source

term assumptions are provided in Table 2 with the risk dominant release phase indicated in bold print.

TABLE 1. BFN UNITS 2 AND 3 INITIAL CORE INVENTORY (GE Uprated Fuel at 100% POWER)

Isotope Name	Core Inventory (Bq)	Isotope Name	Core Inventory (Bq)	Isotope Name	Core Inventory (Bq)	Isotope Name	Core Inventory (Bq)
Cr-51	1.73E+17	Nb-97m	7.00E+18	Te-127	4.14E+17	Ce-141	6.77E+18
Mn-54	9.24E+15	Mo-99	7.59E+18	Te-127m	5.55E+16	Ce-143	6.27E+18
Mn-56	3.51E+17	Mo-101	6.79E+18	Te-129	1.24E+18	Ce-144	5.57E+18
Fe-55	5.28E+16	Tc-99m	6.63E+18	Te-129m	1.86E+17	Pr-142	3.11E+17
Co-58	2.13E+16	Tc-101	6.79E+18	Te-131m	5.70E+17	Pr-143	6.12E+18
Co-60	2.13E+16	Tc-104	4.92E+18	Te-131	3.53E+18	Pr-144	5.60E+18
As-78	2.49E+16	Ru-103	6.05E+18	Te-132	5.67E+18	Pr-144m	6.69E+16
Ge-78	2.43E+16	Rh-103m	5.45E+18	Te-133	4.80E+18	Pr-145	4.26E+18
Se-81	2.23E+17	Ru-105	4.01E+18	Te-133m	3.03E+18	Pr-147	2.67E+18
Se-81m	6.23E+15	Rh-105	3.78E+18	Te-134	6.88E+18	Nd-147	2.69E+18
Se-83	1.99E+17	Ru-106	2.18E+18	I-128	5.02E+16	Nd-149	1.54E+18
Br-82	2.41E+16	Rh-106	2.34E+18	I-130	1.33E+17	Nd-151	7.77E+17
Br-83	5.11E+17	Rh-106m	7.19E+16	I-131	3.98E+18	Pm-147	6.91E+17
Br-84	8.94E+17	Rh-107	2.25E+18	I-132	5.76E+18	Pm-148	1.18E+18
Kr-83m	5.12E+17	Pd-109	1.19E+18	I-133	8.19E+18	Pm-148m	1.76E+17
Kr-85	5.36E+16	Ag-109m	1.19E+18	I-134	9.01E+18	Pm-149	2.35E+18
Kr-85m	1.09E+18	Ag-110m	1.58E+16	I-135	7.66E+18	Pm-150	1.89E+16
Kr-87	2.11E+18	Ag-111	2.59E+17	Xe-131m	4.45E+16	Pm-151	7.78E+17
Kr-88	2.97E+18	Ag-112	1.37E+17	Xe-133	8.21E+18	Sm-153	1.82E+18
Rb-86	9.50E+15	Cd-115	7.20E+16	Xe-133m	2.55E+17	Sm-155	1.45E+17
Rb-88	3.02E+18	Cd-117	4.05E+16	Xe-135	2.86E+18	Sm-156	8.92E+16
Rb-89	3.88E+18	In-113m	5.52E+15	Xe-135m	1.59E+18	Eu-154	4.69E+16
Sr-89	4.00E+18	In-115m	7.21E+16	Xe-138	6.81E+18	Eu-155	3.29E+16
Sr-90	4.27E+17	In-116m	3.13E+16	Cs-134	8.51E+17	Eu-156	5.98E+17
Sr-91	4.98E+18	In-117m	4.74E+16	Cs-134m	2.19E+17	Eu-157	8.00E+16
Sr-92	5.36E+18	In-117	3.74E+16	Cs-135m	1.01E+17	Eu-158	3.39E+16
Y-90	4.53E+17	Sn-113	5.52E+15	Cs-136	2.90E+17	Gd-159	9.08E+17
Y-91	5.12E+18	Sn-121	8.79E+16	Cs-137	5.62E+17	W-187	1.60E+16
Y-91m	2.89E+18	Sn-123m	6.03E+16	Cs-138	7.54E+18	Np-239	7.76E+19
Y-92	5.38E+18	Sn-127	2.65E+17	Ba-137m	5.33E+17	Pu-238	1.49E+16
Y-93	6.19E+18	Sn-128	6.46E+17	Ba-139	7.35E+18	Pu-239	1.77E+15
Y-94	6.21E+18	Sb-125	7.81E+16	Ba-140	7.12E+18	Pu-240	2.29E+15
Y-95	6.64E+18	Sb-131	3.34E+18	Ba-141	6.68E+18	Pu-241	6.64E+17
Zr-95	7.23E+18	Sn-125	6.88E+16	Ba-142	6.35E+18	Am-241	8.13E+14
Nb-95	7.26E+18	Sb-127	4.17E+17	La-140	7.37E+18	Cm-242	1.82E+17
Nb-95m	5.27E+16	Sb-129	1.26E+18	La-141	6.71E+18	Cm-244	8.50E+15
Zr-97	7.39E+18	Sb-130	4.08E+17	La-142	6.50E+18		
Nb-97	7.44E+18	Te-125m	1.68E+16	La-143	6.23E+18		

TABLE 2. SOURCE TERM ASSUMPTIONS

Release Phase	Release Time, s	Release Duration, s	Release Data for MACCS: Case ENMKCTT								
			Kr-Xe	I	Cs	Te-Sb	Sr	Ru	La	Ce	Ba
1	1275.1	7096.4	6.510E-1	6.294E-4	4.982E-4	5.092E-7	1.272E-6	1.322E-4	6.443E-8	2.859E-7	2.825E-5
2	8371.5	13233.4	3.434E-1	1.752E-1	1.850E-1	2.213E-2	7.608E-5	1.409E-2	1.645E-5	1.776E-4	1.595E-3
3	21604.9	43205.7	5.600E-3	2.600E-2	3.511E-2	8.616E-2	3.055E-3	0.000E0	2.872E-4	9.501E-4	1.244E-3
4	64810.6	64800.0	0.000E0	4.640E-2	4.249E-2	6.284E-2	4.790E-4	0.000E0	2.070E-5	1.760E-4	2.110E-4

Risk Dominant Plume 2

Warning Time (From Scram), s 600

Release Phase	Release Time, s	Release Duration, s	Release Data for MACCS: Case MIALF								
			Kr-Xe	I	Cs	Te-Sb	Sr	Ru	La	Ce	Ba
1	11220.4	10383.0	5.281E-1	2.620E-4	1.171E-3	2.198E-5	6.341E-7	3.541E-6	2.134E-8	4.627E-8	4.521E-6
2	21603.3	21601.8	1.531E-1	3.540E-5	1.578E-4	2.008E-6	5.540E-8	2.970E-7	9.00E-10	2.060E-9	4.500E-7
3	43205.1	43200.9	1.125E-1	1.340E-5	5.209E-5	5.375E-7	1.510E-8	9.400E-8	1.50E-10	2.60E-10	3.620E-7
4	86406.0	43194.2	2.100E-2	1.900E-6	6.643E-6	6.776E-8	2.000E-9	1.700E-8	1.00E-11	2.00E-11	5.350E-7

Risk Dominant Plume 1

Warning Time (From Scram), s 2627.7

Release Phase	Release Time, s	Release Duration, s	Release Data for MACCS: Case NIH								
			Kr-Xe	I	Cs	Te-Sb	Sr	Ru	La	Ce	Ba
1	34363.1	8854.8	1.642E-2	3.452E-4	3.256E-4	7.437E-5	1.235E-6	1.291E-5	1.330E-7	5.041E-7	3.099E-6
2	43217.8	21611.1	5.926E-1	4.736E-3	5.208E-3	1.530E-3	6.917E-5	8.600E-6	7.150E-6	2.855E-5	3.296E-5
3	64829.0	21606.0	1.638E-1	6.000E-6	2.088E-5	1.451E-4	2.040E-6	1.000E-8	1.760E-7	1.830E-6	9.400E-7
4	86435.0	43173.0	1.134E-1	1.540E-4	1.800E-4	9.559E-4	1.000E-8	1.900E-7	2.000E-9	2.000E-8	3.400E-7

Risk Dominant Plume 2

Warning Time (From Scram), s 600

Release Phase	Release Time, s	Release Duration, s	Release Data for MACCS: Case NIHNSP								
			Kr-Xe	I	Cs	Te-Sb	Sr	Ru	La	Ce	Ba
1	34363.1	8847.4	4.607E-2	1.493E-3	1.279E-3	1.600E-4	2.231E-6	1.827E-5	1.846E-7	6.979E-7	7.831E-6
2	43210.4	21615.2	7.743E-2	1.880E-4	2.140E-4	2.836E-4	1.771E-5	1.500E-7	1.918E-6	8.135E-6	7.449E-6
3	64825.7	21608.5	7.980E-2	1.300E-5	2.974E-5	1.978E-4	5.870E-6	2.000E-8	5.560E-7	4.027E-6	2.560E-6
4	86434.2	43184.0	1.028E-1	1.080E-4	1.285E-4	7.365E-4	5.900E-7	1.300E-7	5.600E-8	4.200E-7	4.500E-7

Risk Dominant Plume 1

Warning Time (From Scram), s 600

TABLE 2 (continued)

Release Phase	Release Time, s	Release Duration, s	Release Data for MACCS: Case OIA								
			Kr-Xe	I	Cs	Te-Sb	Sr	Ru	La	Ce	Ba
1	96989.5	11032.8	9.471E-1	1.840E-1	1.887E-1	4.224E-2	5.210E-7	3.356E-7	4.231E-8	3.792E-7	2.644E-6
2	108022.3	21580.0	1.000E-4	2.550E-2	2.876E-2	4.751E-3	7.650E-8	1.833E-6	1.120E-9	7.300E-9	1.930E-7

Risk Dominant Plume 1

Warning Time (From Scram), s 994.3

Release Phase	Release Time, s	Release Duration, s	Release Data for MACCS: Case OIALF								
			Kr-Xe	I	Cs	Te-Sb	Sr	Ru	La	Ce	Ba
1	18177.6	3433.0	5.743E-3	7.723E-5	5.483E-5	1.025E-5	1.231E-7	1.937E-6	1.825E-8	1.465E-7	3.114E-7
2	21610.6	21607.3	2.774E-1	3.387E-5	4.938E-5	3.484E-5	1.776E-6	1.680E-7	1.676E-7	7.975E-7	7.736E-7
3	43217.9	43211.0	4.665E-1	4.460E-5	6.050E-5	2.742E-4	4.220E-7	1.400E-7	3.960E-8	3.550E-7	2.560E-7
4	86428.9	43190.4	1.479E-1	5.600E-5	1.192E-4	5.478E-5	2.500E-8	3.000E-8	9.00E-10	1.100E-8	2.100E-8

Risk Dominant Plume 3

Warning Time (From Scram), s 994.3

Release Phase	Release Time, s	Release Duration, s	Release Data for MACCS: Case PID								
			Kr-Xe	I	Cs	Te-Sb	Sr	Ru	La	Ce	Ba
1	78449.2	7967.3	3.570E-2	2.054E-5	2.182E-5	2.054E-5	5.744E-7	9.485E-6	1.287E-7	3.629E-7	2.600E-6
2	86416.5	21603.6	4.388E-1	1.450E-4	1.583E-4	5.241E-4	1.461E-5	1.408E-5	1.646E-6	6.642E-6	1.046E-5
3	108020.2	21597.2	1.320E-1	5.000E-7	5.930E-7	9.167E-6	1.290E-6	0.000E0	1.110E-7	8.990E-7	5.100E-7

Risk Dominant Plume 2

Warning Time (From Scram), s 600

Release Phase	Release Time, s	Release Duration, s	Release Data for MACCS: Case PIDNSP								
			Kr-Xe	I	Cs	Te-Sb	Sr	Ru	La	Ce	Ba
1	62069.6	2761.5	5.438E-3	1.322E-5	1.679E-5	3.184E-5	8.986E-7	4.381E-6	1.664E-7	7.880E-7	1.186E-6
2	64831.0	21602.1	3.253E-1	1.188E-4	1.117E-4	3.531E-3	1.634E-4	3.364E-6	1.782E-5	5.887E-5	6.547E-5
3	86433.1	21600.0	2.342E-1	3.030E-5	3.988E-5	9.549E-4	9.140E-5	4.900E-7	8.020E-6	3.539E-5	3.554E-5
4	108033.1	21580.0	1.048E-1	5.100E-5	8.643E-5	6.164E-4	2.050E-5	5.000E-8	1.420E-6	1.015E-5	8.200E-6

Risk Dominant Plume 2

Warning Time (From Scram), s 600

TABLE 2 (continued)

Release Phase	Release Time, s	Release Duration, s	Release Data for MACCS: Case PIHDEP								
			Kr-Xe	I	Cs	Te-Sb	Sr	Ru	La	Ce	Ba
1	67127.5	19313.4	9.467E-1	5.450E-2	4.927E-2	1.401E-1	6.315E-4	3.389E-6	4.200E-5	4.658E-4	2.687E-4
2	86440.9	21600.0	2.000E-4	2.373E-2	1.979E-2	1.935E-2	7.900E-6	3.927E-6	7.400E-7	4.700E-6	1.430E-5
3	108040.9	21560.0	1.000E-4	5.867E-2	5.575E-2	5.173E-3	3.000E-7	6.464E-6	3.000E-8	1.000E-7	5.540E-5

Risk Dominant Plume 1

Warning Time (From Scram), s 14400

Release Phase	Release Time, s	Release Duration, s	Release Data for MACCS: Case PIHDEPV								
			Kr-Xe	I	Cs	Te-Sb	Sr	Ru	La	Ce	Ba
1	79000.6	7432.0	9.453E-1	9.975E-2	8.234E-2	7.246E-2	1.772E-5	1.308E-6	1.441E-6	1.168E-5	9.528E-6
2	86432.6	21600.0	3.000E-4	1.375E-2	1.078E-2	2.943E-2	8.150E-6	3.088E-6	7.960E-7	4.600E-6	4.732E-6
3	108032.6	21580.0	2.000E-4	1.070E-2	2.243E-2	1.097E-2	4.600E-7	5.330E-7	4.800E-8	2.100E-7	1.040E-6

Risk Dominant Plume 1

Warning Time (From Scram), s 14400

Release Phase	Release Time, s	Release Duration, s	Release Data for MACCS: Case PIHDHB								
			Kr-Xe	I	Cs	Te-Sb	Sr	Ru	La	Ce	Ba
1	51487.8	13336.3	9.467E-1	3.051E-2	5.478E-2	2.427E-1	3.589E-2	3.554E-5	8.160E-3	2.549E-2	1.476E-2
2	64824.1	21614.7	2.000E-4	3.989E-2	3.874E-2	3.242E-2	2.560E-3	4.600E-7	3.220E-4	2.700E-3	1.150E-3
3	86438.7	21600.0	1.000E-4	2.616E-2	2.326E-2	9.753E-2	1.000E-5	9.890E-6	0.000E0	1.000E-5	5.000E-5
4	108038.7	21580.0	1.000E-4	4.414E-2	5.573E-2	3.377E-3	0.000E0	6.040E-6	0.000E0	0.000E0	1.100E-4

Risk Dominant Plume 1

Warning Time (From Scram), s 14400

Release Phase	Release Time, s	Release Duration, s	Release Data for MACCS: Case PIHDLF								
			Kr-Xe	I	Cs	Te-Sb	Sr	Ru	La	Ce	Ba
1	44490.1	20328.0	9.401E-1	1.879E-1	2.258E-1	1.125E-1	1.089E-2	1.889E-3	1.534E-3	6.683E-3	4.993E-3
2	64818.1	21612.5	7.100E-3	9.400E-3	8.191E-3	2.543E-2	1.370E-3	4.000E-6	1.700E-4	1.512E-3	6.140E-4
3	86430.6	21601.9	4.000E-4	4.300E-3	9.694E-3	8.866E-2	2.000E-5	4.100E-5	2.000E-6	1.400E-5	3.500E-5
4	108032.5	21580.0	0.000E0	1.900E-3	7.852E-3	3.882E-2	0.000E0	5.000E-6	0.000E0	1.000E-6	9.000E-6

Risk Dominant Plume 1

Warning Time (From Scram), s 14400

TABLE 2 (continued)

Release Phase	Release Time, s	Release Duration, s	Release Data for MACCS: Case PIHDLV								
			Kr-Xe	I	Cs	Te-Sb	Sr	Ru	La	Ce	Ba
1	39529.3	3686.7	5.764E-1	7.857E-3	5.919E-3	1.374E-3	3.039E-5	9.805E-5	2.825E-6	7.652E-6	5.580E-5
2	**43216.0**	**21607.1**	**3.391E-1**	**1.856E-2**	**1.835E-2**	**1.289E-2**	**9.796E-4**	**1.295E-5**	**1.170E-4**	**4.787E-4**	**4.314E-4**
3	64823.1	21607.1	2.570E-2	1.500E-4	4.848E-4	3.437E-3	1.130E-4	2.400E-6	1.100E-5	1.091E-4	5.440E-5
4	86430.2	43185.1	4.900E-3	5.680E-3	9.298E-3	4.494E-2	3.000E-6	5.000E-7	4.000E-7	2.400E-6	1.800E-6

Risk Dominant Plume 2

Warning Time (From Scram), s 14400

Release Phase	Release Time, s	Release Duration, s	Release Data for MACCS: Case PIHNDP								
			Kr-Xe	I	Cs	Te-Sb	Sr	Ru	La	Ce	Ba
1	37392.5	5834.7	5.764E-1	7.857E-3	5.919E-3	1.374E-3	3.039E-5	9.805E-5	2.825E-6	7.652E-6	5.580E-5
2	**43227.3**	**21612.2**	**3.391E-1**	**1.856E-2**	**1.835E-2**	**1.289E-2**	**9.796E-4**	**1.295E-5**	**1.170E-4**	**4.787E-4**	**4.314E-4**
3	64839.4	21614.0	2.570E-2	1.500E-4	4.848E-4	3.437E-3	1.130E-4	2.400E-6	1.100E-5	1.091E-4	5.440E-5
4	86453.4	43160.0	4.900E-3	5.680E-3	9.298E-3	4.494E-2	3.000E-6	5.000E-7	4.000E-7	2.400E-6	1.800E-6

Risk Dominant Plume 2

Warning Time (From Scram), s 14400

Release Phase	Release Time, s	Release Duration, s	Release Data for MACCS: Case PJH								
			Kr-Xe	I	Cs	Te-Sb	Sr	Ru	La	Ce	Ba
1	**5703.7**	**15915.4**	**1.156E-1**	**7.126E-5**	**6.364E-5**	**1.618E-5**	**9.112E-7**	**4.807E-7**	**1.005E-7**	**3.381E-7**	**5.531E-7**
2	21619.1	21607.3	2.551E-1	1.384E-5	1.324E-5	9.952E-6	3.228E-7	1.800E-9	3.490E-8	1.994E-7	1.465E-7
3	43226.4	43213.6	2.621E-1	2.130E-5	2.961E-5	9.661E-5	5.700E-8	2.700E-9	5.400E-9	2.920E-8	2.610E-8
4	86440.0	43178.1	9.590E-2	3.996E-4	4.806E-4	2.555E-4	1.900E-8	2.00E-10	1.100E-9	8.300E-9	1.090E-8

Risk Dominant Plume 1

Warning Time (From Scram), s 600

Release Phase	Release Time, s	Release Duration, s	Release Data for MACCS: Case PJHNSP								
			Kr-Xe	I	Cs	Te-Sb	Sr	Ru	La	Ce	Ba
1	1303.2	3625.2	3.264E-2	6.979E-3	6.979E-3	2.816E-4	3.603E-6	1.216E-5	4.365E-8	7.230E-8	2.945E-5
2	**4928.4**	**16680.1**	**5.030E-1**	**1.760E-1**	**1.754E-1**	**1.526E-2**	**4.186E-4**	**9.610E-4**	**3.977E-5**	**1.188E-4**	**8.570E-4**
3	21608.6	43200.0	2.862E-1	1.240E-2	1.417E-2	1.969E-2	3.258E-4	4.380E-5	3.546E-5	1.535E-4	1.706E-4
4	64808.6	64800.0	5.670E-2	7.200E-3	9.990E-3	7.074E-2	6.700E-6	5.000E-6	6.600E-7	4.100E-6	4.000E-6

Risk Dominant Plume 2

Warning Time (From Scram), s 600

TABLE 2 (continued)

Release Phase	Release Time, s	Release Duration, s	Release Data for MACCS: Case PLF								
			Kr-Xe	I	Cs	Te-Sb	Sr	Ru	La	Ce	Ba
1	34389.1	8841.	5.468E-2	1.346E-4	1.503E-4	1.546E-5	5.850E-7	6.285E-6	8.312E-8	5.875E-7	1.723E-6
2	**43230.7**	**21618.**	**5.662E-1**	**4.596E-4**	**7.236E-4**	**4.222E-3**	**1.564E-4**	**1.174E-5**	**1.469E-5**	**6.020E-5**	**6.580E-5**
3	64848.9	21619.	1.421E-1	1.780E-5	4.552E-5	1.088E-4	1.200E-6	1.000E-8	1.000E-7	1.110E-6	7.600E-7
4	86468.3	43145.	1.187E-1	2.610E-4	2.800E-4	9.108E-4	0.000E0	1.040E-6	0.000E0	1.000E-8	6.000E-7

Risk Dominant Plume 2

Warning Time (From Scram), s 14251.5

3.2 Meteorological Data Sampling Method

The atmospheric dispersion of radioactive material from a postulated accident depends on the meteorological conditions that exist from the start of the accident through a period of tens to hundreds of hours following the accident. Since the weather that could occur coincident with the accident is diverse, representative meteorological data sequences are selected as input to the dispersion model to reflect the dependence of the transport and dispersion process on the site weather. The selection process is done by means of sampling techniques from a full year of hourly weather data taken from the BFN on-site meteorological tower. For this analysis, the technique referred to as weather bin sampling in the MACCS2 V1.12 code was used for the 1980 year of data.

This sampling method ensures a complete coverage of diurnal, seasonal, and 4-day cycles without the statistical noise of methods that utilize random sampling and includes the "rain tails" (ground shine dose from deposition due to delayed rain).

The meteorological data assessment is done by sorting the weather sequence into categories that provide a realistic representation of the year's weather without overlooking weather conditions that are instrumental in producing major consequences. A set of 40 weather categories has been selected for the MACCS2 V1.12 model to reflect these requirements. Up to eight meteorological scenarios are selected for each category, limited by the number of meteorological scenarios available for that category.

Given a postulated large accident, large numbers of early fatalities and injuries are normally associated with relatively low probability weather events such as rainfall or wind speed slowdowns within 50 miles of the plant site or with stable weather and moderate wind speeds at the start of the release. In MACCS2 V1.12 these weather data types have been selected to be among the 40 categories utilized in the assessment process.

The 40 categories are described in Table 3 where the frequency of occurrence of weather for each category is given. The weather data represent one year of meteorological data for the Browns Ferry Nuclear Plant site. The entire year of data, 8760 hourly recordings, are sorted into the 40 weather categories. Each sequence is examined to determine (1) the first occurrence of rain within 50 miles of the site, or (2) the stability category and wind speed at the start of the sequence. The first of these conditions that is satisfied by the sequence determines the weather category to which it is assigned. Following the assessment process, the start hour of each weather sequence will have been assigned to one and only one weather category. Each of the weather categories then includes a set of weather sequences representing the corresponding weather type. The probability of occurrence of that weather type is the ratio of the number of weather sequences in the category to the total number of sequences in the year's weather data set.

With this information, weather sequences can be sampled to reflect the weather data for the full year. This ensures representation of each type of weather sequence, those important to realistic representation of the weather data set, and those important to the occurrence of the most serious accident consequences due to rainout in high population areas.

TABLE 3. WEATHER DATA CATEGORIES

	METBIN		WIND DIRECTION 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	TOTAL	PER CENT
1	B[1]	3[2]	0.181	0.078	0.054	0.102	0.018	0.018	0.000	0.003	0.006	0.021	0.009	0.000	0.000	0.003	0.316	0.190	332	3.7900
2	B	4	0.027	0.008	0.011	0.084	0.076	0.103	0.163	0.053	0.183	0.167	0.068	0.000	0.000	0.000	0.038	0.019	263	3.0023
3	D	1	0.179	0.051	0.038	0.051	0.038	0.051	0.026	0.038	0.038	0.051	0.064	0.077	0.038	0.013	0.115	0.128	78	0.8904
4	D	2	0.151	0.076	0.065	0.096	0.037	0.039	0.019	0.015	0.034	0.030	0.025	0.029	0.032	0.027	0.154	0.171	801	9.1438
5	D	3	0.073	0.041	0.036	0.112	0.080	0.083	0.057	0.052	0.083	0.108	0.087	0.024	0.024	0.014	0.077	0.050	714	8.1507
6	D	4	0.031	0.006	0.006	0.077	0.066	0.103	0.096	0.100	0.182	0.193	0.093	0.009	0.000	0.001	0.032	0.006	809	9.2352
7	D	5	0.005	0.008	0.008	0.042	0.037	0.164	0.138	0.175	0.233	0.151	0.024	0.000	0.000	0.000	0.011	0.003	377	4.3037
8	D	6	0.000	0.012	0.000	0.000	0.047	0.188	0.271	0.282	0.141	0.047	0.012	0.000	0.000	0.000	0.000	0.000	85	0.9703
9	E	1	0.144	0.088	0.043	0.045	0.050	0.015	0.020	0.028	0.038	0.063	0.053	0.055	0.045	0.048	0.128	0.136	397	4.5320
10	E	2	0.124	0.065	0.013	0.121	0.099	0.013	0.016	0.037	0.042	0.059	0.047	0.039	0.058	0.042	0.148	0.076	815	9.3037
11	E	3	0.090	0.029	0.008	0.065	0.149	0.029	0.037	0.065	0.106	0.106	0.039	0.020	0.014	0.041	0.141	0.061	490	5.5936
12	E	4	0.071	0.009	0.003	0.021	0.047	0.041	0.079	0.159	0.144	0.232	0.050	0.006	0.003	0.009	0.085	0.041	340	3.8813
13	F	1	0.058	0.041	0.022	0.017	0.009	0.019	0.026	0.073	0.147	0.119	0.088	0.065	0.043	0.039	0.153	0.082	464	5.2968
14	F	2	0.044	0.010	0.011	0.028	0.044	0.016	0.016	0.047	0.092	0.151	0.056	0.078	0.176	0.061	0.094	0.075	816	9.3151
15	F	3	0.041	0.007	0.004	0.011	0.037	0.011	0.011	0.097	0.146	0.261	0.075	0.082	0.049	0.007	0.067	0.093	268	3.0594
16	F	4	0.150	0.013	0.000	0.000	0.000	0.025	0.038	0.163	0.150	0.237	0.050	0.038	0.000	0.000	0.050	0.087	80	0.9132
17	R1[3]	3[4]	0.079	0.013	0.008	0.024	0.029	0.034	0.024	0.061	0.069	0.069	0.045	0.082	0.140	0.103	0.132	0.087	378	4.3151
18	R1	8	0.162	0.014	0.000	0.014	0.014	0.014	0.000	0.068	0.027	0.014	0.027	0.068	0.162	0.149	0.135	0.135	74	0.8447
19	R1	16	0.143	0.032	0.008	0.032	0.056	0.024	0.024	0.048	0.056	0.032	0.040	0.063	0.095	0.087	0.119	0.143	126	1.4384
20	R1	32	0.100	0.028	0.005	0.043	0.033	0.019	0.038	0.033	0.038	0.038	0.047	0.066	0.100	0.090	0.161	0.161	211	2.4087
21	R1	48	0.100	0.027	0.000	0.053	0.033	0.020	0.007	0.040	0.053	0.080	0.047	0.067	0.053	0.060	0.180	0.180	150	1.7123
22	R1	80	0.098	0.016	0.019	0.048	0.019	0.035	0.003	0.048	0.044	0.067	0.086	0.057	0.035	0.051	0.210	0.165	315	3.5959
23	R2	3	0.051	0.020	0.000	0.000	0.010	0.020	0.020	0.071	0.041	0.061	0.102	0.071	0.143	0.112	0.163	0.112	98	1.1187
24	R2	8	0.000	0.000	0.000	1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1	0.0114
25	R2	16	0.200	0.100	0.000	0.000	0.000	0.100	0.000	0.100	0.000	0.000	0.100	0.000	0.000	0.100	0.200	0.100	10	0.1142
26	R2	32	0.385	0.000	0.000	0.000	0.000	0.231	0.077	0.000	0.000	0.077	0.077	0.000	0.000	0.000	0.154	0.000	13	0.1484
27	R2	48	0.300	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.200	0.200	0.000	0.000	0.200	0.100	10	0.1142
28	R2	80	0.217	0.087	0.000	0.000	0.000	0.000	0.000	0.000	0.043	0.043	0.130	0.000	0.043	0.043	0.174	0.217	23	0.2626
29	R3	3	0.132	0.000	0.000	0.000	0.000	0.026	0.000	0.026	0.026	0.079	0.105	0.079	0.053	0.079	0.184	0.211	38	0.4338
30	R3	8	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.000	0.000	1	0.0114
31	R3	16	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.000	1	0.0114
32	R3	32	0.000	0.000	0.000	0.000	0.000	0.333	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.333	0.333	3	0.0342
33	R3	48	0.000	0.000	0.000	0.000	0.000	1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1	0.0114
34	R3	80	0.000	0.000	0.000	0.000	0.000	0.333	0.667	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3	0.0342
35	R4	3	0.059	0.059	0.020	0.039	0.000	0.000	0.059	0.039	0.137	0.039	0.059	0.059	0.137	0.059	0.196	0.039	51	0.5822
36	R4	8	0.000	0.000	0.000	0.100	0.000	0.000	0.000	0.000	0.100	0.200	0.000	0.100	0.100	0.000	0.300	0.100	10	0.1142
37	R4	16	0.105	0.105	0.000	0.000	0.053	0.000	0.000	0.000	0.105	0.053	0.000	0.000	0.105	0.105	0.263	0.105	19	0.2169
38	R4	32	0.000	0.000	0.032	0.097	0.000	0.065	0.032	0.000	0.097	0.065	0.065	0.000	0.129	0.065	0.194	0.161	31	0.3539
39	R4	48	0.050	0.000	0.000	0.050	0.100	0.100	0.000	0.000	0.050	0.050	0.100	0.050	0.100	0.000	0.250	0.100	20	0.2283
40	R4	80	0.091	0.091	0.023	0.091	0.045	0.023	0.000	0.023	0.068	0.023	0.045	0.000	0.000	0.000	0.295	0.182	44	0.5023
41	ALL		0.086	0.035	0.020	0.062	0.054	0.047	0.044	0.063	0.093	0.107	0.057	0.039	0.051	0.035	0.120	0.088	8760	

* * * * METEOROLOGICAL BIN SUMMARY * * * *

BIN PRIORITIES

S V - INITIAL WEATHER CONDITIONS WITH STABILITY CLASS S AND WIND SPEED INTERVAL V

(1) STABILITY CLASSES ARE B = A/B, D = C/D, E = E, AND F = F

(2) WIND SPEED INTERVALS ARE IN METERS PER SECOND, 1 (0-1), 2 (1-2), 3 (2-3), 4 (3-5), 5 (5-7), 6 (GT 7)

RI XX - RAIN INTENSITY I WITHIN THE INTERVAL ENDING AT XX

(3) INTERVAL ENDPOINTS ARE IN KILOMETERS FROM THE ACCIDENT SITE, THE 6 INTERVAL ENDPOINTS ARE 3 8 16 32 48 80 (km)

(4) RAIN INTENSITIES ARE IN MILLIMETERS OF RAIN PER HOUR, THE 3 INTENSITY BREAKPOINTS ARE 2.0 4.0 6.0 (mm/hr)

3.3 Population Distribution and Land Use

Population estimates for the year 2036 within 50 miles of the BFN plant were provided by TVAN [12] and are shown in Table 4. The chronic dose calculation covered a 50-mile radius. Habitable land fraction was estimated from regional maps in each of the 16 polar grid segments and is shown in Table 5.

3.4 Atmospheric Transport and Dispersion

The dispersion model implemented in MACCS2 V1.12 is described in detail in NUREG/CR-4691, Volume 2[13]. It is a Gaussian, time-dependent, plume segment model that has been in use for consequence assessments since the Reactor Safety Study (RSS)[7] in 1975. The plume is assumed to be transported in a straight line downwind in accordance with the measured wind direction. A surface roughness of 10 cm was used for the BFN site.

For each start hour selected by the meteorological sampling technique, the MAACS2 V1.12 dispersion model uses the subsequent meteorological conditions to predict the dispersion and transport of the released plume of radioactive material. The sequence of hourly recordings is used to account for changing meteorological conditions (i.e., wind speed, atmospheric thermal stability, and rain intensity may change during plume passage). The wind direction; however, is assumed to be invariant during and following the release.

Based on the wind speed in each hour, the stability, wind speed, and accumulated rainfall are assigned to all spatial intervals through which the plume passes during the hour. If the wind speed for an hour is not sufficient for the plume to fully traverse an interval, the wind speed, stability, and accumulated precipitation are averaged for all hours the plume is within that interval.

In MACCS2 V1.12, the effects of release duration, mixing layer depth, building wake, plume rise due to sensible heat buoyancy, and dry and wet removal processes are included. The ground concentration is calculated from the air concentration and the deposition rate. The radioactive material deposited on the ground is subtracted from the airborne radioactive material.

3.5 Radiation Exposure Pathways and Dosimetry

The calculation of radiation exposure in MACCS2 V1.12 is divided into two categories: early exposure that occurs during and shortly after radioactive plume passage, and chronic exposure that occurs over a longer time period. These two categories of exposure are discussed separately. The MACCS2 825-isotope data file was used to obtain dose factors for the calculation.

3.5.1 Early Exposure

The calculation of radiation doses due to early exposure considers the pathways: cloud shine, ground shine and inhalation.

TABLE 4. POPULATION DATA (estimated for 2036)

Sector	Distance Range, miles										
	0-1	1-2	2-3	3-4	4-5	5-10	10-20	20-30	30-40	40-50	Total
N	2	18	203	379	501	2,501	2,710	6,269	19,130	8,662	40,375
NNE	0	5	33	379	521	1,931	10,929	3,393	3,965	5,432	26,588
NE	2	10	65	114	278	8,350	21,034	23,783	16,920	17,488	88,044
ENE	6	82	365	289	432	2,273	35,534	69,528	63,014	10,840	182,363
E	11	54	25	13	53	5,170	5,731	136,377	105,268	12,263	264,965
ESE	5	9	208	0	0	86	1,096	4,229	20,885	17,799	44,317
SE	2	0	0	0	2	7,626	40,473	12,373	11,248	36,295	108,019
SSE	0	0	1	0	1	16,037	28,541	26,702	36,087	42,023	149,392
S	0	3	29	59	25	1,768	7,038	4,083	8,813	15,505	37,323
SSW	0	2	12	235	343	3,708	12,873	1,467	2,417	6,519	27,576
SW	0	0	3	90	381	1,523	6,376	3,318	4,075	19,955	35,721
WSW	0	0	70	122	79	168	3,957	3,895	29,617	4,376	42,284
W	0	55	200	15	3	69	3,855	17,460	37,892	4,842	64,391
WNW	0	0	1	4	2	85	3,124	28,974	51,789	11,954	95,933
NW	0	2	8	4	33	640	11,805	9,717	6,912	4,615	33,736
NNW	52	467	272	84	104	3,104	3,232	3,110	24,997	16,467	51,889
Total	80	707	1,495	1,787	2,758	55,039	198,308	354,678	443,029	235,035	1,292,916

TABLE 5. HABITABLE LAND FRACTION										
	Distance Interval, miles									
Sector	0-1	1-2	2-3	3-4	4-5	5-10	10-20	20-30	30-40	40-50
N	1.00	1.00	1.00	1.00	1.00	0.80	0.90	1.00	1.00	1.00
NNE	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
NE	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
ENE	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
E	1.00	1.00	1.00	0.80	0.90	0.90	1.00	0.90	1.00	1.00
ESE	0.90	0.70	0.80	0.10	0.10	0.20	0.60	0.90	0.90	0.90
SE	0.00	0.20	0.00	0.00	0.30	0.50	0.60	1.00	1.00	1.00
SSE	0.00	0.00	0.00	0.00	0.30	1.00	1.00	1.00	1.00	0.90
S	0.00	0.10	0.20	0.60	1.00	1.00	1.00	1.00	0.90	0.70
SSW	0.00	0.20	0.80	0.90	1.00	1.00	1.00	1.00	0.90	0.90
SW	0.00	0.80	0.90	0.95	1.00	1.00	1.00	1.00	1.00	1.00
WSW	0.00	0.70	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
W	0.00	0.80	0.90	1.00	1.00	0.90	1.00	1.00	0.90	0.90
WNW	0.00	0.00	0.20	0.70	0.80	0.40	0.60	0.60	0.90	1.00
NW	0.00	0.00	0.10	0.20	0.30	0.50	1.00	1.00	1.00	1.00
NNW	0.50	0.30	0.30	1.00	1.00	0.80	1.00	1.00	1.00	1.00

Conversion factors for early health effects are not available for several of the isotopes used in this analysis, therefore early doses and health effects were not calculated.

3.5.2 Chronic Exposure

The calculation of doses due to chronic exposure considers four pathways including long-term ground shine, inhalation of resuspended radionuclides, ingestion of radionuclides from directly contaminated crops, and ingestion of radionuclides via root uptake. This model has been considerably upgraded from the CRAC2 [(2)] model and is based on the COMIDA2 dynamic food chain model [(8)].

The interdiction and decontamination model used with the COMIDA2 food ingestion model was designed to be as close as possible to the original WASH-1400 model as currently implemented in MACCS2. Based on assumptions in NUREG-1150, the limiting value for the Effective Dose Equivalent (EDE) is 0.025 sv (2.5 rem) and the limiting value for the thyroid dose is 0.075 sv (7.5 rem).

Before calculating doses to an individual, the model first determines whether protective actions should be taken, such as land decontamination or prohibiting land use (land interdiction). When calculating population doses in a given area, the model assumes a constant population with respect to time.

Land fractions were given in the Browns Ferry PRA Chapter 9 in Table 9.3-7[(13)] out to 50 miles. Regional maps were inspected and the data were filled in for the grid distances that were not provided on the table. Region indexes and watershed indexes were also estimated by using

regional maps. Crop season and share were taken from Browns Ferry PRA Chapter 9 Table 9.3-8 [14].

When better information was not available, the MACCS2 sample problem input was revised using generic economic data that applied to the entire region. Data for several parameters were taken from the BFN-PRA Chapter 9 [14], including per diem living expenses for relocated persons, the cost of farm and non-farm decontamination, the fraction of land devoted to farming and dairy production. The Statistical Abstracts of the United States [6] were used to obtain values for the value of farm and non-farm wealth. Economic data was extrapolated to the year 2016 using two inflation rates for the future, 3% and 7%.

3.6 Evacuation and Other Protective Measures

Evacuation and other protective measures (i.e., sheltering and relocation) are taken to avoid or reduce immediate exposure to the passing radioactive plume and ground contamination. Evacuation is potentially the most effective method of avoiding radiation exposure and can provide essentially total protection if completed prior to arrival of the plume. The assumptions used for evacuation and sheltering are provided in Table 6.

It was assumed that 95% of the people within 10 miles of the plant would evacuate starting two hours after the alarm. All of these people would continue to evacuate until they reached a distance of 20 miles from the plant. The remaining 5% of the people would stay and go about their normal activities. Because they would spend a significant fraction of that time indoors, the shielding factors are higher for these people, although the exposure levels to the plume are higher. The shielding inherent in normally inhabited structures offers some degree of protection against external penetrating radiation from airborne and ground-deposited radionuclides. Furthermore, the exclusion of a significant amount of airborne radioactive material from the interior of a structure, either by natural effects or by certain ventilation strategies, can reduce the amount of inhaled radionuclides as well. The shielding provided by a structure against external penetrating radiation from airborne or surface deposited radionuclides is expressed in terms of a shielding factor which is the ratio of the dose received inside the structure to the dose that would be received outside the structure.

TABLE 6. ASSUMED PROTECTIVE MEASURES

Shielding And Exposure Factors,

Three Values Of Each Protection Factor Are Supplied, One For Each Type Of Activity:
Activity Type:
1 - Evacuees While Moving
2 - Normal Activity In Sheltering And Evacuation Zone
3 - Sheltered Activity

Cloud Shielding Factor

Evacuees	Normal	Shelter
1.	0.75	0.5

Breathing Rate (Cubic Meters Per Second)

2.66E-4	2.66E-4	2.66E-4

Skin Protection Factor

1.0	0.41	0.33

Ground Shielding Factor

0.5	0.33	0.08

Resuspension Inhalation Model Concentration Coefficient (/Meter)
1.E-4
Resuspension Concentration Coefficient Half-Life (Sec)
1.82e5 (2.11 Days)
Last Ring In The Movement Zone = 7 (Evacuees Disappear After Traveling To 20 Miles)
Radial Evacuation Speed (M/S) = .234
Number Of Rings In Shelter And Evacuation Zone = 6
Delay Time To Take Shelter = 7200.
Delay Time To Begin Evacuation = 0.

Shelter And Relocation Zone Data
Duration Of The Emergency Phase (Seconds From Plume Arrival) = 604800. (One Week)
Critical Organ For Relocation Decisions = 'L-Edewbody'
Hot Spot Relocation Time (Seconds From Plume Arrival) 43200. (One-Half Day)
Normal Relocation Time (Seconds From Plume Arrival) 86400. (One Day)
Hot Spot Relocation Dose Criterion Threshold (Sieverts) 0.5 (50 Rem Dose To Whole Body In 1 Week Triggers Relocation)
Normal Relocation Dose Criterion Threshold (Sieverts) 0.25 (25 Rem Dose To Whole Body In 1 Week Triggers Relocation)

4.0 RESULTS

4.1 Health Effects Due To Radiation Doses

The MACCS2 V1.12 code determines the health effects which might occur due to the radiation doses from radioactivity released into the environment during a nuclear reactor accident. Two general categories of health effects are considered; early health effects and latent health effects. Early health effects were not calculated in this analysis. Latent health effects, which might show up at least one year after the radiation doses, include latent cancer fatalities, thyroid effects, and genetic effects. Latent health effects are calculated for the radiation doses received from early exposure and chronic exposure. The health effects models used in MACCS2 V1.12 have changed considerably from the CRAC2 health effects. The revised cancer risk model is now based on BIER V[9].

Latent health effects, expressed as latent cancer fatalities, are calculated for both early exposure and chronic exposure. Latent cancer and total population dose CCDFs for the area within 50 miles from the plant were computed in this study and are provided in Table 7.

4.2 Economic Impact

The economic impact model in MACCS2 V1.12 estimates the direct costs of measures taken to mitigate the public health effects of a reactor accident. The model costs are in 2016 dollars, and the model was run with the two sets of assumptions of the inflation rate after the year 2000; 3% and 7%. The model estimates the cost of evacuation, milk, and crop disposal, decontamination, and land use prohibition (interdiction) that may be required after an accident. CCDFs for the cost impacts associated with accident mitigation within 50 miles from the plant are provided in Table 7, as are the CCDFs for the areas and populations impacted.

The economic models of consequence analysis require several cost elements. Thus, for example, the cost of evacuating a person is assigned a given value, and the total cost of evacuation is merely that figure multiplied by the number of people evacuated. The quantity of each agricultural product condemned is calculated and multiplied by the value of a unit quantity of that product. The economic model is a simple counting and adding routine in which the key factors are the unit costs of each counter-measure.

Hence, the economic model essentially adds the costs incurred for evacuation, relocation, the interdiction of land use, and the destruction of crops. Note that it does not consider the cost of health effects (this would involve assigning a monetary value to life, which would be extremely controversial). It does not consider any economic multiplier effects (e.g., the affect on employment in one area if a factory in another has to close). There is no attempt to incorporate plant costs, although in the prediction of economic risk the contribution of the in-plant property damage far exceeds that of the offsite property damage. As demonstrated by the accident at Three Mile Island, the costs of decontaminating and reconstructing the plant and of replacing power may be several billion dollars even though the offsite consequences may be very small indeed.

TABLE 7. CCDFs FOR POPULATION DOSE, CHRONIC CANCER FATALITIES, AND ECONOMIC IMPACT

Cancer Fatalities	Probability of Exceedence, Latent Cancer Fatalities																
	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+00	1.00E+00	6.73E-01	9.66E-01	7.63E-01	1.00E+00	8.85E-02	4.68E-02	2.15E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	3.28E-01	1.00E+00	7.51E-01
2.00E+00	1.00E+00	2.34E-01	7.09E-01	2.90E-01	1.00E+00	4.08E-04	2.00E-04	2.12E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.63E-02	1.00E+00	2.90E-01
3.00E+00	1.00E+00	1.43E-01	4.29E-01	1.46E-01	9.98E-01			3.20E-05	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.97E-01	9.97E-01	1.89E-02	1.00E+00	1.27E-01
5.00E+00	1.00E+00	4.21E-02	2.00E-01	4.84E-02	9.41E-01				9.96E-01	9.77E-01	1.00E+00	1.00E+00	9.09E-01	9.08E-01	7.42E-04	1.00E+00	2.44E-02
7.00E+00	1.00E+00	8.02E-03	1.13E-01	1.15E-02	8.27E-01				9.55E-01	8.74E-01	1.00E+00	9.98E-01	7.18E-01	7.26E-01		9.97E-01	4.31E-03
1.00E+01	9.88E-01	2.07E-03	4.83E-02	2.02E-03	5.63E-01				7.80E-01	6.13E-01	9.93E-01	9.69E-01	4.82E-01	4.80E-01		9.52E-01	2.00E-04
2.00E+01	6.41E-01				1.99E-01				3.21E-01	1.99E-01	7.56E-01	5.45E-01	8.54E-02	8.73E-02		4.92E-01	
3.00E+01	3.41E-01				7.37E-02				1.06E-01	4.73E-02	4.45E-01	2.48E-01	2.16E-03	2.18E-03		2.16E-01	
5.00E+01	5.63E-02				3.10E-03				1.31E-03	7.15E-05	1.43E-01	5.03E-02				2.20E-02	
7.00E+01	2.37E-04										5.80E-02	8.33E-04					
1.00E+02											4.85E-03						
2.00E+02																	
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5.00E+05																	
7.00E+05																	
1.00E+06																	
Mean	2.70E+01	1.74E+00	3.63E+00	1.88E+00	1.41E+01	5.68E-01	3.42E-01	7.42E-01	1.74E+01	1.42E+01	3.30E+01	2.43E+01	1.10E+01	1.11E+01	9.97E-01	2.24E+01	1.78E+00

TABLE 7 (continued)

Population Dose	Probability of Exceedence, Effective Whole Body Population Dose from 0-50 mi, person-rem																
	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+03	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00
2.00E+03	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00
3.00E+03	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00
5.00E+03	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.99E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00
7.00E+03	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.98E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00
1.00E+04	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.92E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00
2.00E+04	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.33E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00
3.00E+04	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.97E-01	8.17E-01	9.98E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00
5.00E+04	1.00E+00	9.98E-01	1.00E+00	9.99E-01	1.00E+00	9.32E-01	5.20E-01	9.82E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.89E-01	1.00E+00	1.00E+00
7.00E+04	1.00E+00	9.88E-01	1.00E+00	9.94E-01	1.00E+00	7.67E-01	3.08E-01	8.84E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.48E-01	1.00E+00	9.97E-01
1.00E+05	1.00E+00	9.64E-01	9.97E-01	9.79E-01	1.00E+00	4.88E-01	1.72E-01	6.12E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	8.03E-01	1.00E+00	9.84E-01
2.00E+05	1.00E+00	6.73E-01	9.66E-01	7.63E-01	1.00E+00	8.85E-02	4.68E-02	2.15E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	3.28E-01	1.00E+00	7.51E-01
3.00E+05	1.00E+00	3.83E-01	8.78E-01	4.60E-01	1.00E+00	1.10E-02	5.54E-03	8.10E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.89E-01	1.00E+00	4.58E-01
5.00E+05	1.00E+00	1.80E-01	5.50E-01	1.97E-01	1.00E+00			2.69E-03	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.99E-01	9.99E-01	4.49E-02	1.00E+00	1.94E-01
7.00E+05	1.00E+00	1.09E-01	3.39E-01	1.10E-01	9.95E-01			8.65E-06	1.00E+00	9.99E-01	1.00E+00	1.00E+00	9.83E-01	9.83E-01	7.75E-03	1.00E+00	8.66E-02
1.00E+06	1.00E+00	4.21E-02	2.00E-01	4.84E-02	9.41E-01				9.96E-01	9.77E-01	1.00E+00	1.00E+00	9.09E-01	9.08E-01	7.42E-04	1.00E+00	2.44E-02
2.00E+06	9.88E-01	2.07E-03	4.83E-02	2.02E-03	5.63E-01				7.80E-01	6.13E-01	9.93E-01	9.69E-01	4.82E-01	4.80E-01		9.52E-01	2.00E-04
3.00E+06	8.53E-01		3.03E-03	3.01E-06	3.21E-01				5.05E-01	3.63E-01	9.30E-01	7.85E-01	2.27E-01	2.30E-01		7.14E-01	
5.00E+06	4.72E-01				1.13E-01				1.92E-01	9.66E-02	5.78E-01	3.79E-01	2.08E-02	2.07E-02		3.29E-01	
7.00E+06	2.41E-01				4.80E-02				4.76E-02	2.22E-02	3.37E-01	1.63E-01				1.28E-01	
1.00E+07	5.63E-02				3.10E-03				1.31E-03	7.15E-05	1.43E-01	5.03E-02				2.20E-02	
2.00E+07											4.85E-03						
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2.00E+08																	
3.00E+08																	
5.00E+08																	
7.00E+08																	
1.00E+09																	
Mean	5.39E+06	3.47E+05	7.25E+05	3.75E+05	2.81E+06	1.14E+05	6.84E+04	1.48E+05	3.48E+06	2.84E+06	6.59E+06	4.85E+06	2.21E+06	2.22E+06	1.99E+05	4.47E+06	3.56E+05

TABLE 7 (continued)

Economic Cost ($)	Probability of Exceedence, Total Economic Cost (2016 Dollars, Assuming 3% Inflation After 2000)																
	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+06	1.00E+00	9.96E-01	1.00E+00	9.99E-01	1.00E+00	9.58E-01	8.30E-01	9.83E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.80E-01	1.00E+00	9.98E-01
2.00E+06	1.00E+00	9.92E-01	1.00E+00	9.99E-01	1.00E+00	9.29E-01	7.75E-01	9.79E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.51E-01	1.00E+00	9.97E-01
3.00E+06	1.00E+00	9.90E-01	1.00E+00	9.97E-01	1.00E+00	8.87E-01	7.10E-01	9.62E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.26E-01	1.00E+00	9.97E-01
5.00E+06	1.00E+00	9.82E-01	1.00E+00	9.94E-01	1.00E+00	8.18E-01	6.19E-01	9.47E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	8.88E-01	1.00E+00	9.94E-01
7.00E+06	1.00E+00	9.73E-01	1.00E+00	9.88E-01	1.00E+00	7.39E-01	5.37E-01	9.27E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	8.56E-01	1.00E+00	9.91E-01
1.00E+07	1.00E+00	9.60E-01	1.00E+00	9.83E-01	1.00E+00	6.30E-01	4.62E-01	8.93E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	8.10E-01	1.00E+00	9.83E-01
2.00E+07	1.00E+00	9.01E-01	9.99E-01	9.45E-01	1.00E+00	3.57E-01	2.24E-01	7.20E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	6.13E-01	1.00E+00	9.43E-01
3.00E+07	1.00E+00	8.40E-01	9.94E-01	9.15E-01	1.00E+00	2.21E-01	1.59E-01	5.96E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	5.00E-01	1.00E+00	9.11E-01
5.00E+07	1.00E+00	6.92E-01	9.84E-01	8.04E-01	1.00E+00	3.06E-02	1.98E-02	3.75E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	3.64E-01	1.00E+00	8.13E-01
7.00E+07	1.00E+00	5.95E-01	9.71E-01	7.12E-01	1.00E+00	5.53E-03	1.79E-02	2.46E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	2.93E-01	1.00E+00	7.06E-01
1.00E+08	1.00E+00	5.10E-01	9.39E-01	6.15E-01	1.00E+00	2.74E-03	9.19E-03	1.87E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	2.40E-01	1.00E+00	6.04E-01
2.00E+08	1.00E+00	2.21E-01	8.33E-01	3.28E-01	1.00E+00	1.57E-04	1.24E-03	3.51E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	5.90E-02	1.00E+00	2.61E-01
3.00E+08	1.00E+00	1.19E-01	7.37E-01	1.89E-01	1.00E+00	1.57E-04	1.24E-03	2.59E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	2.91E-02	1.00E+00	1.38E-01
5.00E+08	1.00E+00	3.57E-02	4.94E-01	5.46E-02	1.00E+00			1.01E-03	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.99E-01	9.99E-01		1.00E+00	3.12E-02
7.00E+08	1.00E+00	2.19E-02	3.13E-01	4.15E-02	1.00E+00			6.27E-05	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.92E-01	9.92E-01		1.00E+00	1.64E-02
1.00E+09	1.00E+00	1.10E-02	1.87E-01	2.03E-02	9.98E-01			1.19E-05	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.79E-01	9.79E-01		1.00E+00	7.17E-03
2.00E+09	1.00E+00	1.32E-04	8.03E-02	3.25E-04	9.63E-01				9.99E-01	9.74E-01	1.00E+00	1.00E+00	7.89E-01	7.91E-01		9.97E-01	
3.00E+09	9.96E-01	6.58E-05	4.37E-02	1.60E-04	8.82E-01				9.71E-01	8.80E-01	9.99E-01	9.94E-01	5.01E-01	5.01E-01		9.67E-01	
5.00E+09	9.11E-01		6.36E-03		5.61E-01				6.91E-01	5.12E-01	9.30E-01	8.48E-01	2.47E-01	2.46E-01		7.55E-01	
7.00E+09	7.03E-01		8.65E-06		3.85E-01				4.72E-01	3.44E-01	7.15E-01	6.00E-01	1.30E-01	1.30E-01		5.18E-01	
1.00E+10	4.74E-01				2.51E-01				3.06E-01	2.00E-01	4.82E-01	3.73E-01	4.01E-02	3.91E-02		3.19E-01	
2.00E+10	1.10E-01				5.34E-02				1.73E-02	4.48E-03	8.91E-02	8.97E-02				5.93E-02	
3.00E+10	1.67E-02				6.66E-03					1.46E-04	1.85E-03	2.00E-02				9.85E-03	
5.00E+10	5.42E-05				1.66E-05							3.01E-06					
7.00E+10																	
1.00E+11																	
2.00E+11																	
3.00E+11																	
5.00E+11																	
7.00E+11																	
1.00E+12																	
Mean	1.16E+10	1.49E+08	7.49E+08	1.95E+08	7.81E+09	1.83E+07	1.42E+07	5.84E+07	8.13E+09	6.61E+09	1.13E+10	1.04E+10	3.92E+09	3.92E+09	6.14E+07	9.08E+09	1.64E+08

TABLE 7 (continued)

Economic Cost ($)	Probability of Exceedence, Total Economic Cost (2016 Dollars, Assuming 7% Inflation After 2000)																
	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+06	1.00E+00	9.99E-01	1.00E+00	1.00E+00	1.00E+00	9.70E-01	8.68E-01	9.95E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.89E-01	1.00E+00	9.99E-01
2.00E+06	1.00E+00	9.96E-01	1.00E+00	9.99E-01	1.00E+00	9.56E-01	8.26E-01	9.83E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.79E-01	1.00E+00	9.98E-01
3.00E+06	1.00E+00	9.93E-01	1.00E+00	9.99E-01	1.00E+00	9.38E-01	7.87E-01	9.81E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.61E-01	1.00E+00	9.98E-01
5.00E+06	1.00E+00	9.90E-01	1.00E+00	9.98E-01	1.00E+00	8.95E-01	7.20E-01	9.69E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.35E-01	1.00E+00	9.97E-01
7.00E+06	1.00E+00	9.85E-01	1.00E+00	9.95E-01	1.00E+00	8.67E-01	6.62E-01	9.56E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.10E-01	1.00E+00	9.95E-01
1.00E+07	1.00E+00	9.80E-01	1.00E+00	9.92E-01	1.00E+00	8.01E-01	5.99E-01	9.45E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	8.83E-01	1.00E+00	9.94E-01
2.00E+07	1.00E+00	9.59E-01	1.00E+00	9.80E-01	1.00E+00	6.07E-01	4.33E-01	8.81E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	8.00E-01	1.00E+00	9.78E-01
3.00E+07	1.00E+00	9.16E-01	1.00E+00	9.58E-01	1.00E+00	4.32E-01	2.67E-01	7.83E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	6.81E-01	1.00E+00	9.61E-01
5.00E+07	1.00E+00	8.64E-01	9.95E-01	9.21E-01	1.00E+00	2.65E-01	1.83E-01	6.32E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	5.31E-01	1.00E+00	9.21E-01
7.00E+07	1.00E+00	7.87E-01	9.93E-01	8.81E-01	1.00E+00	1.15E-01	7.66E-02	5.08E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	4.49E-01	1.00E+00	8.73E-01
1.00E+08	1.00E+00	6.59E-01	9.80E-01	7.87E-01	1.00E+00	2.06E-02	1.86E-02	3.33E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	3.42E-01	1.00E+00	7.87E-01
2.00E+08	1.00E+00	4.71E-01	9.32E-01	5.83E-01	1.00E+00	7.99E-04	4.93E-03	1.58E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	2.03E-01	1.00E+00	5.74E-01
3.00E+08	1.00E+00	3.13E-01	8.71E-01	4.13E-01	1.00E+00	5.14E-04	2.16E-03	5.18E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.52E-02	1.00E+00	3.73E-01
5.00E+08	1.00E+00	1.36E-01	7.62E-01	2.12E-01	1.00E+00	1.57E-04	1.24E-03	2.63E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	2.91E-02	1.00E+00	1.55E-01
7.00E+08	1.00E+00	5.47E-02	6.25E-01	9.30E-02	1.00E+00			3.79E-03	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	7.38E-05	1.00E+00	6.48E-02
1.00E+09	1.00E+00	3.53E-02	4.46E-01	5.18E-02	1.00E+00			6.81E-05	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.99E-01	9.99E-01		1.00E+00	2.54E-02
2.00E+09	1.00E+00	9.33E-03	1.68E-01	1.84E-02	9.98E-01				1.00E+00	9.99E-01	1.00E+00	1.00E+00	9.75E-01	9.75E-01		1.00E+00	5.29E-03
3.00E+09	1.00E+00	1.45E-04	1.02E-01	5.76E-04	9.83E-01				1.00E+00	9.90E-01	1.00E+00	1.00E+00	8.94E-01	8.93E-01		1.00E+00	
5.00E+09	9.99E-01	6.58E-05	4.60E-02	1.60E-04	9.18E-01				9.87E-01	9.20E-01	1.00E+00	9.98E-01	5.71E-01	5.70E-01		9.81E-01	
7.00E+09	9.79E-01		1.34E-02		7.62E-01				8.89E-01	7.25E-01	9.90E-01	9.62E-01	3.81E-01	3.79E-01		8.90E-01	
1.00E+10	8.78E-01		6.36E-03		5.14E-01				6.22E-01	4.62E-01	8.96E-01	7.91E-01	2.10E-01	2.10E-01		6.90E-01	
2.00E+10	4.32E-01				2.26E-01				2.66E-01	1.67E-01	4.37E-01	3.26E-01	2.89E-02	2.90E-02		2.79E-01	
3.00E+10	2.03E-01				9.40E-02				5.41E-02	3.58E-02	1.87E-01	1.49E-01	3.57E-05	3.57E-05		1.19E-01	
5.00E+10	3.65E-02				1.10E-02				3.27E-04	2.19E-04	1.31E-02	3.66E-02				1.55E-02	
7.00E+10	2.91E-03				1.28E-03					3.01E-06	5.87E-05	4.62E-03				2.02E-03	
1.00E+11																	
2.00E+11																	
3.00E+11																	
5.00E+11																	
7.00E+11																	
1.00E+12																	
Mean	2.13E+10	2.73E+08	1.38E+09	3.59E+08	1.44E+10	3.37E+07	2.60E+07	1.07E+08	1.50E+10	1.22E+10	2.08E+10	1.91E+10	7.22E+09	7.21E+09	1.13E+08	1.67E+10	3.03E+08

TABLE 7 (continued)

Economic	Probability of Exceedence, Population Dependent Cost (2016 Dollars, Assuming 3% Inflation After 2000)																
Cost ($)	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+06	1.00E+00	9.87E-01	1.00E+00	9.94E-01	1.00E+00	9.41E-01	7.94E-01	9.76E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.62E-01	1.00E+00	9.95E-01
2.00E+06	1.00E+00	9.86E-01	1.00E+00	9.93E-01	1.00E+00	9.02E-01	7.33E-01	9.73E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.30E-01	1.00E+00	9.94E-01
3.00E+06	1.00E+00	9.81E-01	1.00E+00	9.89E-01	1.00E+00	8.46E-01	6.49E-01	9.50E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.01E-01	1.00E+00	9.92E-01
5.00E+06	1.00E+00	9.71E-01	1.00E+00	9.85E-01	1.00E+00	7.75E-01	5.95E-01	9.33E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	8.67E-01	1.00E+00	9.87E-01
7.00E+06	1.00E+00	9.60E-01	1.00E+00	9.81E-01	1.00E+00	6.89E-01	4.95E-01	9.03E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	8.36E-01	1.00E+00	9.83E-01
1.00E+07	1.00E+00	9.47E-01	9.97E-01	9.72E-01	1.00E+00	5.81E-01	4.30E-01	8.63E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	7.91E-01	1.00E+00	9.74E-01
2.00E+07	1.00E+00	8.68E-01	9.94E-01	9.21E-01	1.00E+00	3.25E-01	2.17E-01	6.62E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	5.69E-01	1.00E+00	9.20E-01
3.00E+07	1.00E+00	7.93E-01	9.88E-01	8.83E-01	1.00E+00	1.93E-01	1.38E-01	5.53E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	4.81E-01	1.00E+00	8.77E-01
5.00E+07	1.00E+00	6.49E-01	9.72E-01	7.71E-01	1.00E+00	2.36E-02	1.88E-02	3.21E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	3.36E-01	1.00E+00	7.74E-01
7.00E+07	1.00E+00	5.68E-01	9.54E-01	6.69E-01	1.00E+00	3.71E-03	1.78E-02	2.32E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	2.91E-01	1.00E+00	6.66E-01
1.00E+08	1.00E+00	5.02E-01	9.25E-01	5.98E-01	1.00E+00	1.57E-03	8.94E-03	1.67E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	2.23E-01	1.00E+00	5.87E-01
2.00E+08	1.00E+00	2.10E-01	8.18E-01	3.12E-01	1.00E+00	1.57E-04	1.24E-03	3.26E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	5.57E-02	1.00E+00	2.46E-01
3.00E+08	1.00E+00	1.13E-01	7.15E-01	1.75E-01	1.00E+00	1.57E-04	1.24E-03	2.59E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	2.91E-02	1.00E+00	1.29E-01
5.00E+08	1.00E+00	3.55E-02	4.70E-01	5.39E-02	1.00E+00			1.01E-03	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.99E-01	9.99E-01		1.00E+00	2.81E-02
7.00E+08	1.00E+00	2.17E-02	2.93E-01	4.14E-02	1.00E+00			6.27E-05	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.88E-01	9.88E-01		1.00E+00	1.54E-02
1.00E+09	1.00E+00	1.09E-02	1.77E-01	2.01E-02	9.98E-01			1.19E-05	1.00E+00	9.99E-01	1.00E+00	1.00E+00	9.75E-01	9.75E-01		1.00E+00	6.74E-03
2.00E+09	1.00E+00	1.32E-04	8.01E-02	3.25E-04	9.58E-01				9.98E-01	9.69E-01	1.00E+00	1.00E+00	7.58E-01	7.60E-01		9.95E-01	
3.00E+09	9.95E-01	6.58E-05	4.33E-02	1.60E-04	8.70E-01				9.64E-01	8.61E-01	9.99E-01	9.91E-01	4.80E-01	4.77E-01		9.57E-01	
5.00E+09	8.97E-01		6.36E-03		5.42E-01				8.62E-01	4.90E-01	9.11E-01	8.30E-01	2.39E-01	2.38E-01		7.26E-01	
7.00E+09	6.74E-01		8.65E-06		3.74E-01				4.62E-01	3.36E-01	6.89E-01	5.83E-01	1.24E-01	1.23E-01		4.92E-01	
1.00E+10	4.62E-01				2.46E-01				2.98E-01	1.96E-01	4.65E-01	3.60E-01	3.67E-02	3.66E-02		3.11E-01	
2.00E+10	1.05E-01				5.27E-02				1.58E-02	3.24E-03	8.52E-02	8.73E-02				5.51E-02	
3.00E+10	1.60E-02				6.65E-03					1.46E-04	1.82E-03	1.76E-02				9.58E-03	
5.00E+10	4.25E-05				1.66E-05							3.01E-06					
7.00E+10																	
1.00E+11																	
2.00E+11																	
3.00E+11																	
5.00E+11																	
7.00E+11																	
1.00E+12																	
Mean	1.13E+10	1.41E+08	7.24E+08	1.86E+08	7.67E+09	1.68E+07	1.32E+07	5.44E+07	7.95E+09	6.47E+09	1.11E+10	1.02E+10	3.82E+09	3.82E+09	5.85E+07	8.89E+09	1.56E+08

TABLE 7 (continued)

Economic Cost ($)	Probability of Exceedence, Population Dependent Cost (2016 Dollars, Assuming 7% Inflation After 2000)																
	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+06	1.00E+00	9.91E-01	1.00E+00	9.98E-01	1.00E+00	9.56E-01	8.26E-01	9.87E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.78E-01	1.00E+00	9.99E-01
2.00E+06	1.00E+00	9.87E-01	1.00E+00	9.94E-01	1.00E+00	9.37E-01	7.93E-01	9.76E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.61E-01	1.00E+00	9.95E-01
3.00E+06	1.00E+00	9.86E-01	1.00E+00	9.93E-01	1.00E+00	9.19E-01	7.63E-01	9.74E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.41E-01	1.00E+00	9.95E-01
5.00E+06	1.00E+00	9.82E-01	1.00E+00	9.89E-01	1.00E+00	8.60E-01	6.68E-01	9.57E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.04E-01	1.00E+00	9.94E-01
7.00E+06	1.00E+00	9.74E-01	1.00E+00	9.88E-01	1.00E+00	8.18E-01	6.16E-01	9.41E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	8.85E-01	1.00E+00	9.89E-01
1.00E+07	1.00E+00	9.68E-01	1.00E+00	9.83E-01	1.00E+00	7.55E-01	5.55E-01	9.28E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	8.62E-01	1.00E+00	9.87E-01
2.00E+07	1.00E+00	9.43E-01	9.97E-01	9.69E-01	1.00E+00	5.55E-01	3.95E-01	8.45E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	7.70E-01	1.00E+00	9.70E-01
3.00E+07	1.00E+00	8.89E-01	9.95E-01	9.40E-01	1.00E+00	3.97E-01	2.53E-01	7.25E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	6.22E-01	1.00E+00	9.40E-01
5.00E+07	1.00E+00	8.18E-01	9.88E-01	8.95E-01	1.00E+00	2.40E-01	1.76E-01	5.84E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	5.02E-01	1.00E+00	8.91E-01
7.00E+07	1.00E+00	7.47E-01	9.84E-01	8.38E-01	1.00E+00	9.64E-02	6.46E-02	4.72E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	4.30E-01	1.00E+00	8.38E-01
1.00E+08	1.00E+00	6.20E-01	9.65E-01	7.51E-01	1.00E+00	1.57E-02	1.81E-02	2.94E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	3.17E-01	1.00E+00	7.40E-01
2.00E+08	1.00E+00	4.32E-01	9.19E-01	5.53E-01	1.00E+00	7.99E-04	4.70E-03	1.38E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.87E-01	1.00E+00	5.42E-01
3.00E+08	1.00E+00	2.90E-01	8.53E-01	3.92E-01	1.00E+00	5.14E-04	2.16E-03	5.12E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.52E-02	1.00E+00	3.36E-01
5.00E+08	1.00E+00	1.32E-01	7.41E-01	2.04E-01	1.00E+00	1.57E-04	1.24E-03	2.62E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	2.91E-02	1.00E+00	1.49E-01
7.00E+08	1.00E+00	5.06E-02	6.03E-01	8.50E-02	1.00E+00			2.72E-03	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00		1.00E+00	5.69E-02
1.00E+09	1.00E+00	3.52E-02	4.03E-01	5.07E-02	1.00E+00			6.81E-05	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.99E-01	9.99E-01		1.00E+00	2.51E-02
2.00E+09	1.00E+00	9.32E-03	1.63E-01	1.84E-02	9.98E-01				1.00E+00	9.98E-01	1.00E+00	1.00E+00	8.66E-01	8.67E-01		1.00E+00	5.10E-03
3.00E+09	1.00E+00	1.45E-04	1.02E-01	5.48E-04	9.81E-01				1.00E+00	9.85E-01	1.00E+00	1.00E+00	8.66E-01	8.68E-01		9.99E-01	
5.00E+09	9.98E-01	8.58E-05	4.60E-02	1.60E-04	9.02E-01				9.77E-01	9.04E-01	1.00E+00	9.97E-01	5.42E-01	5.40E-01		9.75E-01	
7.00E+09	9.74E-01		1.12E-02		7.37E-01				8.63E-01	6.83E-01	9.84E-01	9.51E-01	3.70E-01	3.69E-01		8.73E-01	
1.00E+10	8.54E-01		6.36E-03		5.02E-01				6.00E-01	4.47E-01	8.72E-01	7.68E-01	2.02E-01	2.01E-01		6.63E-01	
2.00E+10	4.28E-01				2.24E-01				2.54E-01	1.60E-01	4.30E-01	3.18E-01	2.56E-02	2.55E-02		2.74E-01	
3.00E+10	1.93E-01				9.12E-02				4.98E-02	3.22E-02	1.78E-01	1.47E-01	1.92E-05	1.92E-05		1.18E-01	
5.00E+10	3.29E-02				1.10E-02				3.17E-04	2.09E-04	1.10E-02	3.51E-02				1.42E-02	
7.00E+10	2.66E-03				1.14E-03					3.01E-06	3.63E-05	4.55E-03				2.02E-03	
1.00E+11																	
2.00E+11																	
3.00E+11																	
5.00E+11																	
7.00E+11																	
1.00E+12																	
Mean	2.09E+10	2.80E+08	1.33E+09	3.42E+08	1.41E+10	3.10E+07	2.43E+07	1.00E+08	1.46E+10	1.19E+10	2.03E+10	1.87E+10	7.03E+09	7.02E+09	1.08E+08	1.64E+10	2.87E+08

TABLE 7 (continued)

Economic Cost ($)	Probability of Exceedence, Farm Dependent Cost (2016 Dollars, Assuming 3% Inflation After 2000)																
	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+06	1.00E+00	8.47E-01	9.97E-01	9.23E-01	1.00E+00	5.18E-01	3.63E-01	6.77E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	6.38E-01	1.00E+00	9.13E-01
2.00E+06	1.00E+00	6.45E-01	9.81E-01	7.59E-01	1.00E+00	3.65E-01	1.37E-01	5.25E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	4.37E-01	1.00E+00	7.14E-01
3.00E+06	1.00E+00	5.43E-01	9.56E-01	6.70E-01	1.00E+00	1.63E-01	4.01E-02	4.52E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	3.49E-01	1.00E+00	6.09E-01
5.00E+06	1.00E+00	4.27E-01	8.93E-01	5.15E-01	1.00E+00	7.10E-03	2.87E-02	3.55E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	2.05E-01	1.00E+00	5.02E-01
7.00E+06	1.00E+00	3.87E-01	7.88E-01	4.50E-01	1.00E+00	1.56E-03	1.31E-03	2.46E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.42E-01	1.00E+00	4.45E-01
1.00E+07	1.00E+00	2.29E-01	7.12E-01	3.32E-01	1.00E+00	1.76E-05		8.15E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	2.85E-02	1.00E+00	3.33E-01
2.00E+07	1.00E+00	8.37E-02	4.38E-01	1.36E-01	1.00E+00			1.32E-04	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.95E-01	9.95E-01		1.00E+00	1.22E-01
3.00E+07	1.00E+00	2.01E-02	3.11E-01	4.86E-02	9.99E-01				1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.67E-01	9.67E-01		1.00E+00	2.52E-02
5.00E+07	1.00E+00		1.64E-01	1.01E-03	9.67E-01				9.99E-01	9.89E-01	1.00E+00	1.00E+00	8.49E-01	8.48E-01		9.99E-01	
7.00E+07	9.99E-01		1.10E-02		9.21E-01				9.96E-01	9.36E-01	1.00E+00	9.95E-01	6.84E-01	6.84E-01		9.87E-01	
1.00E+08	9.80E-01				7.84E-01				9.41E-01	8.26E-01	9.95E-01	9.38E-01	4.56E-01	4.57E-01		9.11E-01	
2.00E+08	6.21E-01				1.60E-01				3.67E-01	1.69E-01	6.56E-01	4.44E-01	4.14E-02	4.06E-02		3.68E-01	
3.00E+08	1.87E-01				1.69E-02				5.05E-02	9.02E-03	2.15E-01	8.28E-02	2.07E-04	3.15E-04		9.38E-02	
5.00E+08	5.46E-03										3.22E-03						
7.00E+08																	
1.00E+09																	
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1.00E+11																	
2.00E+11																	
3.00E+11																	
5.00E+11																	
7.00E+11																	
1.00E+12																	
Mean	2.33E+08	7.19E+06	2.47E+07	9.26E+06	1.45E+08	1.51E+06	9.69E+05	4.01E+06	1.85E+08	1.47E+08	2.40E+08	2.00E+08	1.01E+08	1.01E+08	2.89E+06	1.88E+08	8.55E+06

TABLE 7 (continued)

Economic	Probability of Exceedence, Farm Dependent Cost (2016 Dollars, Assuming 7% Inflation After 2000)																
Cost ($)	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+06	1.00E+00	9.48E-01	9.99E-01	9.80E-01	1.00E+00	5.95E-01	4.55E-01	8.37E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	7.85E-01	1.00E+00	9.80E-01
2.00E+06	1.00E+00	8.26E-01	9.96E-01	9.15E-01	1.00E+00	5.11E-01	3.47E-01	6.56E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	6.12E-01	1.00E+00	9.04E-01
3.00E+06	1.00E+00	6.96E-01	9.89E-01	8.15E-01	1.00E+00	4.51E-01	2.56E-01	5.52E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	4.62E-01	1.00E+00	7.78E-01
5.00E+06	1.00E+00	5.75E-01	9.65E-01	6.98E-01	1.00E+00	2.15E-01	4.41E-02	4.76E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	3.75E-01	1.00E+00	6.36E-01
7.00E+06	1.00E+00	4.80E-01	9.32E-01	5.98E-01	1.00E+00	5.92E-02	3.38E-02	3.92E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	2.66E-01	1.00E+00	5.57E-01
1.00E+07	1.00E+00	4.18E-01	8.66E-01	4.92E-01	1.00E+00	3.55E-03	2.03E-02	3.40E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.93E-01	1.00E+00	4.84E-01
2.00E+07	1.00E+00	2.21E-01	6.84E-01	3.02E-01	1.00E+00			7.37E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	2.27E-02	1.00E+00	3.09E-01
3.00E+07	1.00E+00	1.54E-01	5.35E-01	2.27E-01	1.00E+00			3.57E-03	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.98E-01	9.98E-01	3.78E-03	1.00E+00	1.83E-01
5.00E+07	1.00E+00	3.80E-02	3.40E-01	7.17E-02	9.99E-01				1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.79E-01	9.79E-01		1.00E+00	4.15E-02
7.00E+07	1.00E+00	6.56E-04	2.70E-01	7.59E-03	9.89E-01				1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.33E-01	9.31E-01		1.00E+00	2.93E-03
1.00E+08	1.00E+00		1.31E-01	2.33E-04	9.62E-01				9.98E-01	9.75E-01	1.00E+00	1.00E+00	8.11E-01	8.12E-01		9.97E-01	
2.00E+08	9.69E-01				7.39E-01				8.98E-01	7.49E-01	9.90E-01	9.25E-01	4.00E-01	4.03E-01		8.75E-01	
3.00E+08	7.98E-01				3.22E-01				5.74E-01	3.36E-01	8.47E-01	6.52E-01	1.14E-01	1.14E-01		5.57E-01	
5.00E+08	2.54E-01				2.62E-02				1.16E-01	2.75E-02	3.07E-01	1.64E-01	6.28E-04	6.28E-04		1.56E-01	
7.00E+08	7.05E-02				1.92E-04				3.66E-03		4.59E-02	9.35E-03				6.83E-03	
1.00E+09																	
2.00E+09																	
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1.00E+11																	
2.00E+11																	
3.00E+11																	
5.00E+11																	
7.00E+11																	
1.00E+12																	
Mean	4.29E+08	1.32E+07	4.54E+07	1.70E+07	2.67E+08	2.78E+06	1.78E+06	7.38E+06	3.41E+08	2.71E+08	4.41E+08	3.68E+08	1.85E+08	1.86E+08	5.32E+06	3.46E+08	1.57E+07

TABLE 7 (continued)

Economic Cost ($)	Probability of Exceedence, Population-Dependent Decontamination Cost (2016 Dollars, Assuming 3% Inflation After 2000)																
	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+06	1.00E+00	9.80E-01	1.00E+00	9.89E-01	1.00E+00	8.46E-01	6.64E-01	9.49E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	8.99E-01	1.00E+00	9.93E-01
2.00E+06	1.00E+00	9.64E-01	1.00E+00	9.82E-01	1.00E+00	7.07E-01	5.28E-01	9.19E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	8.44E-01	1.00E+00	9.85E-01
3.00E+06	1.00E+00	9.48E-01	9.97E-01	9.75E-01	1.00E+00	5.99E-01	4.43E-01	8.68E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	7.94E-01	1.00E+00	9.75E-01
5.00E+06	1.00E+00	8.93E-01	9.94E-01	9.46E-01	1.00E+00	4.01E-01	2.56E-01	7.52E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	6.65E-01	1.00E+00	9.53E-01
7.00E+06	1.00E+00	8.32E-01	9.89E-01	9.07E-01	1.00E+00	3.03E-01	1.99E-01	6.43E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	5.59E-01	1.00E+00	9.10E-01
1.00E+07	1.00E+00	7.73E-01	9.83E-01	8.59E-01	1.00E+00	2.09E-01	1.46E-01	5.47E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	4.88E-01	1.00E+00	8.68E-01
2.00E+07	1.00E+00	5.89E-01	9.55E-01	6.99E-01	1.00E+00	1.02E-02	1.79E-02	2.68E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	2.97E-01	1.00E+00	7.09E-01
3.00E+07	1.00E+00	5.27E-01	9.12E-01	6.15E-01	1.00E+00	2.38E-03	9.00E-03	1.78E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	2.41E-01	1.00E+00	6.11E-01
5.00E+07	1.00E+00	2.88E-01	8.37E-01	3.64E-01	1.00E+00	4.00E-04	1.63E-03	4.01E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	6.82E-02	1.00E+00	3.27E-01
7.00E+07	1.00E+00	1.99E-01	7.91E-01	2.92E-01	1.00E+00	1.57E-04	1.24E-03	2.65E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	3.04E-02	1.00E+00	2.18E-01
1.00E+08	1.00E+00	7.89E-02	6.51E-01	1.35E-01	9.97E-01			8.95E-03	1.00E+00	9.99E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	3.99E-03	1.00E+00	9.98E-02
2.00E+08	1.00E+00	3.38E-02	3.32E-01	4.90E-02	9.80E-01			6.27E-05	9.99E-01	9.97E-01	1.00E+00	1.00E+00	9.89E-01	9.89E-01		1.00E+00	2.26E-02
3.00E+08	1.00E+00	9.54E-03	2.07E-01	1.99E-02	9.62E-01			1.19E-05	9.99E-01	9.92E-01	1.00E+00	9.99E-01	9.69E-01	9.69E-01		9.99E-01	5.94E-03
5.00E+08	9.95E-01	1.45E-04	1.04E-01	5.82E-04	8.77E-01				9.96E-01	9.63E-01	1.00E+00	9.92E-01	8.54E-01	8.57E-01		9.81E-01	
7.00E+08	9.82E-01	6.58E-05	7.89E-02	1.83E-04	7.98E-01				9.75E-01	8.83E-01	9.96E-01	9.70E-01	6.80E-01	6.79E-01		9.37E-01	
1.00E+09	9.32E-01		4.04E-02		6.60E-01				8.90E-01	7.24E-01	9.76E-01	8.92E-01	4.67E-01	4.65E-01		8.24E-01	
2.00E+09	6.25E-01		2.03E-05		3.18E-01				4.90E-01	3.43E-01	7.06E-01	5.26E-01	1.67E-01	1.66E-01		4.62E-01	
3.00E+09	3.90E-01		8.65E-06		1.79E-01				2.85E-01	1.74E-01	4.44E-01	2.85E-01	7.02E-02	7.05E-02		2.52E-01	
5.00E+09	1.52E-01				5.77E-02				7.90E-02	4.02E-02	1.80E-01	9.65E-02	9.08E-03	9.08E-03		8.17E-02	
7.00E+09	4.23E-02				9.48E-03				1.29E-02	2.92E-03	5.87E-02	2.01E-02				1.15E-02	
1.00E+10	3.51E-04										1.33E-04						
2.00E+10																	
3.00E+10																	
5.00E+10																	
7.00E+10																	
1.00E+11																	
2.00E+11																	
3.00E+11																	
5.00E+11																	
7.00E+11																	
1.00E+12																	
Mean	2.99E+09	4.64E+07	2.33E+08	6.00E+07	1.84E+09	5.62E+06	4.33E+06	1.70E+07	2.44E+09	1.90E+09	3.29E+09	2.54E+09	1.26E+09	1.26E+09	1.79E+07	2.32E+09	4.96E+07

TABLE 7 (continued)

Economic Cost ($)	Probability of Exceedence, Population-Dependent Decontamination Cost (2016 Dollars, Assuming 7% Inflation After 2000)																
	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+06	1.00E+00	9.86E-01	1.00E+00	9.93E-01	1.00E+00	9.14E-01	7.59E-01	9.73E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.38E-01	1.00E+00	9.94E-01
2.00E+06	1.00E+00	9.78E-01	1.00E+00	9.88E-01	1.00E+00	8.35E-01	6.43E-01	9.46E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	8.93E-01	1.00E+00	9.90E-01
3.00E+06	1.00E+00	9.68E-01	1.00E+00	9.85E-01	1.00E+00	7.56E-01	5.64E-01	9.29E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	8.61E-01	1.00E+00	9.87E-01
5.00E+06	1.00E+00	9.54E-01	9.98E-01	9.76E-01	1.00E+00	6.22E-01	4.71E-01	8.83E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	8.05E-01	1.00E+00	9.77E-01
7.00E+06	1.00E+00	9.37E-01	9.97E-01	9.70E-01	1.00E+00	5.18E-01	3.69E-01	8.27E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	7.55E-01	1.00E+00	9.69E-01
1.00E+07	1.00E+00	8.72E-01	9.93E-01	9.34E-01	1.00E+00	3.74E-01	2.45E-01	7.29E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	6.28E-01	1.00E+00	9.45E-01
2.00E+07	1.00E+00	7.64E-01	9.81E-01	8.47E-01	1.00E+00	1.68E-01	1.27E-01	5.19E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	4.63E-01	1.00E+00	8.54E-01
3.00E+07	1.00E+00	6.43E-01	9.61E-01	7.53E-01	1.00E+00	3.44E-02	1.98E-02	3.34E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	3.37E-01	1.00E+00	7.70E-01
5.00E+07	1.00E+00	5.52E-01	9.29E-01	6.37E-01	1.00E+00	3.00E-03	1.57E-02	2.09E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	2.75E-01	1.00E+00	6.36E-01
7.00E+07	1.00E+00	3.68E-01	8.80E-01	4.86E-01	1.00E+00	7.99E-04	2.16E-03	8.93E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.32E-01	1.00E+00	4.77E-01
1.00E+08	1.00E+00	2.83E-01	8.29E-01	3.48E-01	1.00E+00	4.00E-04	1.58E-03	3.72E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	6.45E-02	1.00E+00	2.95E-01
2.00E+08	1.00E+00	6.93E-02	6.11E-01	1.15E-01	9.97E-01			1.68E-03	1.00E+00	9.99E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00		1.00E+00	7.48E-02
3.00E+08	1.00E+00	3.54E-02	4.32E-01	5.26E-02	9.93E-01			6.81E-05	1.00E+00	9.98E-01	1.00E+00	1.00E+00	9.95E-01	9.95E-01		1.00E+00	2.57E-02
5.00E+08	1.00E+00	1.61E-02	2.57E-01	3.35E-02	9.70E-01			4.04E-05	9.99E-01	9.94E-01	1.00E+00	1.00E+00	9.76E-01	9.76E-01		9.99E-01	1.29E-02
7.00E+08	9.99E-01	7.03E-03	1.41E-01	1.36E-02	9.26E-01				9.98E-01	9.82E-01	1.00E+00	9.96E-01	9.36E-01	9.36E-01		9.95E-01	3.68E-03
1.00E+09	9.93E-01	1.45E-04	9.83E-02	5.82E-04	8.59E-01				9.91E-01	9.55E-01	9.98E-01	9.90E-01	8.13E-01	8.14E-01		9.71E-01	
2.00E+09	9.12E-01		2.15E-02		6.22E-01				8.53E-01	6.66E-01	9.69E-01	8.55E-01	4.30E-01	4.28E-01		7.92E-01	
3.00E+09	7.50E-01		3.80E-03		4.08E-01				6.07E-01	4.33E-01	8.27E-01	6.53E-01	2.33E-01	2.33E-01		5.90E-01	
5.00E+09	4.39E-01		8.85E-06		2.07E-01				3.26E-01	2.19E-01	5.01E-01	3.30E-01	8.57E-02	8.59E-02		2.95E-01	
7.00E+09	2.67E-01				1.13E-01				1.79E-01	1.06E-01	3.13E-01	1.77E-01	2.99E-02	2.99E-02		1.45E-01	
1.00E+10	1.28E-01				3.99E-02				5.62E-02	2.73E-02	1.54E-01	7.38E-02	2.89E-04	2.89E-04		6.27E-02	
2.00E+10	2.14E-05										4.06E-06						
3.00E+10																	
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3.00E+11																	
5.00E+11																	
7.00E+11																	
1.00E+12																	
Mean	5.51E+09	8.53E+07	4.28E+08	1.10E+08	3.39E+09	1.03E+07	7.97E+06	3.13E+07	4.50E+09	3.50E+09	6.05E+09	4.67E+09	2.32E+09	2.31E+09	3.30E+07	4.27E+09	9.12E+07

TABLE 7 (continued)

Economic Cost ($)	Probability of Exceedence, Farm-Dependent Decontamination Cost (2016 Dollars, Assuming 3% Inflation After 2000)																
	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+06	1.00E+00	3.77E-01	9.39E-01	5.56E-01	1.00E+00			4.28E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	2.72E-02	1.00E+00	5.35E-01
2.00E+06	1.00E+00	1.33E-01	8.33E-01	2.27E-01	1.00E+00			5.47E-04	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00		1.00E+00	1.32E-01
3.00E+06	1.00E+00	8.76E-02	7.47E-01	1.74E-01	1.00E+00				1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00		1.00E+00	6.94E-02
5.00E+06	1.00E+00	1.80E-03	4.43E-01	5.11E-03	1.00E+00				1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00		1.00E+00	
7.00E+06	1.00E+00	4.85E-04	3.42E-01	1.34E-03	9.99E-01				1.00E+00	9.99E-01	1.00E+00	1.00E+00	9.94E-01	9.94E-01		1.00E+00	
1.00E+07	1.00E+00		1.59E-01		9.93E-01				1.00E+00	9.94E-01	1.00E+00	1.00E+00	9.68E-01	9.69E-01		1.00E+00	
2.00E+07	1.00E+00		3.84E-03		9.38E-01				9.98E-01	9.76E-01	1.00E+00	9.99E-01	8.29E-01	8.27E-01		9.98E-01	
3.00E+07	9.98E-01				8.27E-01				9.94E-01	9.14E-01	9.99E-01	9.92E-01	5.48E-01	5.50E-01		9.60E-01	
5.00E+07	9.13E-01				5.38E-01				8.13E-01	5.52E-01	9.67E-01	8.56E-01	6.98E-02	6.91E-02		7.12E-01	
7.00E+07	6.76E-01				2.07E-01				4.00E-01	1.72E-01	7.80E-01	4.72E-01	2.53E-03	2.53E-03		3.74E-01	
1.00E+08	2.61E-01				3.26E-02				4.47E-02	1.28E-02	3.05E-01	9.79E-02				6.58E-02	
2.00E+08																	
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7.00E+11																	
1.00E+12																	
Mean	8.42E+07	1.12E+06	5.75E+06	1.48E+06	5.31E+07	2.04E+05	1.42E+05	4.79E+05	6.69E+07	5.30E+07	8.82E+07	7.07E+07	3.17E+07	3.17E+07	4.71E+05	6.41E+07	1.25E+06

TABLE 7 (continued)

Economic Cost ($)	Probability of Exceedence, Farm-Dependent Decontamination Cost (2016 Dollars, Assuming 7% Inflation After 2000)																
	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+06	1.00E+00	7.39E-01	9.80E-01	8.45E-01	1.00E+00	4.90E-03	2.20E-02	3.37E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	3.77E-01	1.00E+00	8.59E-01
2.00E+06	1.00E+00	3.46E-01	9.29E-01	4.74E-01	1.00E+00			1.78E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	7.04E-03	1.00E+00	4.57E-01
3.00E+06	1.00E+00	1.51E-01	8.79E-01	2.81E-01	1.00E+00			6.61E-04	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00		1.00E+00	2.02E-01
5.00E+06	1.00E+00	1.10E-01	7.71E-01	1.96E-01	1.00E+00			2.64E-04	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00		1.00E+00	9.33E-02
7.00E+06	1.00E+00	6.57E-03	5.57E-01	2.59E-02	1.00E+00				1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00		1.00E+00	7.90E-03
1.00E+07	1.00E+00	1.79E-03	4.28E-01	4.59E-03	1.00E+00				1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00		1.00E+00	
2.00E+07	1.00E+00		1.08E-01		9.93E-01				1.00E+00	9.92E-01	1.00E+00	1.00E+00	9.64E-01	9.64E-01		1.00E+00	
3.00E+07	1.00E+00		1.91E-02		9.72E-01				9.99E-01	9.80E-01	1.00E+00	1.00E+00	8.75E-01	8.76E-01		1.00E+00	
5.00E+07	9.99E-01				8.62E-01				9.96E-01	9.38E-01	9.99E-01	9.95E-01	6.42E-01	6.45E-01		9.74E-01	
7.00E+07	9.80E-01				7.30E-01				9.56E-01	7.86E-01	9.97E-01	9.64E-01	2.93E-01	2.92E-01		8.86E-01	
1.00E+08	8.82E-01				4.59E-01				7.44E-01	4.46E-01	9.48E-01	7.84E-01	3.60E-02	3.57E-02		6.45E-01	
2.00E+08	1.73E-01				1.99E-02				1.56E-02	4.96E-03	1.92E-01	5.57E-02				3.89E-02	
3.00E+08	9.85E-03										1.30E-03	5.55E-04				2.75E-04	
5.00E+08																	
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3.00E+11																	
5.00E+11																	
7.00E+11																	
1.00E+12																	
Mean	1.55E+08	2.06E+06	1.06E+07	2.72E+06	9.76E+07	3.75E+05	2.61E+05	8.80E+05	1.23E+08	9.75E+07	1.62E+08	1.30E+08	5.83E+07	5.83E+07	8.67E+05	1.18E+08	2.30E+06

TABLE 7 (continued)

Economic Cost ($)	Probability of Exceedence, Population-Dependent Interdiction Cost (2016 Dollars, Assuming 3% Inflation After 2000)																
	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+06	1.00E+00	9.67E-01	1.00E+00	9.93E-01	1.00E+00	9.26E-01	7.68E-01	9.74E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.49E-01	1.00E+00	9.95E-01
2.00E+06	1.00E+00	9.80E-01	1.00E+00	9.89E-01	1.00E+00	8.46E-01	6.33E-01	9.52E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.01E-01	1.00E+00	9.92E-01
3.00E+06	1.00E+00	9.72E-01	1.00E+00	9.85E-01	1.00E+00	7.97E-01	5.99E-01	9.36E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	8.74E-01	1.00E+00	9.88E-01
5.00E+06	1.00E+00	9.58E-01	1.00E+00	9.80E-01	1.00E+00	6.74E-01	4.85E-01	8.91E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	8.29E-01	1.00E+00	9.81E-01
7.00E+06	1.00E+00	9.37E-01	9.97E-01	9.64E-01	1.00E+00	5.66E-01	4.13E-01	8.47E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	7.61E-01	1.00E+00	9.71E-01
1.00E+07	1.00E+00	8.93E-01	9.92E-01	9.41E-01	1.00E+00	4.31E-01	2.67E-01	7.49E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	6.42E-01	1.00E+00	9.45E-01
2.00E+07	1.00E+00	7.84E-01	9.84E-01	8.75E-01	1.00E+00	1.86E-01	1.23E-01	5.51E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	4.77E-01	1.00E+00	8.73E-01
3.00E+07	1.00E+00	6.80E-01	9.72E-01	7.93E-01	1.00E+00	3.35E-02	2.46E-02	3.71E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	3.75E-01	1.00E+00	8.01E-01
5.00E+07	1.00E+00	5.38E-01	9.41E-01	6.40E-01	1.00E+00	3.71E-03	1.70E-02	2.23E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	2.83E-01	1.00E+00	6.41E-01
7.00E+07	1.00E+00	4.58E-01	9.09E-01	5.75E-01	1.00E+00	1.57E-03	7.43E-03	1.61E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	2.03E-01	1.00E+00	5.67E-01
1.00E+08	1.00E+00	2.70E-01	8.51E-01	3.87E-01	1.00E+00	7.99E-04	2.16E-03	5.35E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.01E-01	1.00E+00	3.55E-01
2.00E+08	1.00E+00	1.16E-01	6.75E-01	1.77E-01	9.96E-01	1.57E-04	1.24E-03	2.60E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	2.91E-02	1.00E+00	1.33E-01
3.00E+08	1.00E+00	3.64E-02	4.80E-01	6.14E-02	9.93E-01			1.01E-03	1.00E+00	9.99E-01	1.00E+00	1.00E+00	9.95E-01	9.95E-01		1.00E+00	3.82E-02
5.00E+08	1.00E+00	2.18E-02	2.48E-01	4.11E-02	9.71E-01			6.27E-05	9.99E-01	9.95E-01	1.00E+00	1.00E+00	9.82E-01	9.82E-01		9.99E-01	1.52E-02
7.00E+08	1.00E+00	1.10E-02	1.67E-01	1.99E-02	9.55E-01			4.04E-05	9.98E-01	9.89E-01	1.00E+00	9.97E-01	9.53E-01	9.53E-01		9.94E-01	7.34E-03
1.00E+09	9.97E-01	3.59E-04	1.06E-01	7.14E-04	9.12E-01				9.95E-01	9.69E-01	1.00E+00	9.90E-01	8.62E-01	8.65E-01		9.81E-01	2.87E-05
2.00E+09	9.45E-01	6.58E-05	3.98E-02	1.60E-04	6.88E-01				8.96E-01	7.23E-01	9.79E-01	9.17E-01	4.60E-01	4.58E-01		8.61E-01	
3.00E+09	7.98E-01		7.92E-03		4.72E-01				6.31E-01	4.73E-01	8.71E-01	7.33E-01	2.64E-01	2.63E-01		6.60E-01	
5.00E+09	4.97E-01				2.70E-01				3.74E-01	2.53E-01	5.43E-01	4.31E-01	9.13E-02	9.13E-02		3.74E-01	
7.00E+09	3.30E-01				1.58E-01				1.88E-01	1.11E-01	3.76E-01	2.48E-01	2.16E-02	2.14E-02		2.18E-01	
1.00E+10	1.53E-01				7.44E-02				4.57E-02	2.73E-02	1.57E-01	1.09E-01	1.92E-05	1.92E-05		9.64E-02	
2.00E+10	1.48E-02				6.50E-03					2.01E-04	1.45E-03	1.63E-02				6.88E-03	
3.00E+10	9.93E-04				7.56E-04					8.65E-06		8.13E-04				7.73E-04	
5.00E+10																	
7.00E+10																	
1.00E+11																	
2.00E+11																	
3.00E+11																	
5.00E+11																	
7.00E+11																	
1.00E+12																	
Mean	6.25E+09	9.13E+07	4.70E+08	1.22E+08	4.14E+09	1.11E+07	8.67E+06	3.70E+07	4.64E+09	3.73E+09	6.39E+09	5.65E+09	2.40E+09	2.40E+09	4.00E+07	5.07E+09	1.04E+08

TABLE 7 (continued)

Economic Cost ($)	Probability of Exceedence, Population-Dependent Interdiction Cost (2016 Dollars, Assuming 7% Inflation After 2000)																
	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+06	1.00E+00	9.90E-01	1.00E+00	9.96E-01	1.00E+00	9.46E-01	7.98E-01	9.80E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.68E-01	1.00E+00	9.96E-01
2.00E+06	1.00E+00	9.86E-01	1.00E+00	9.93E-01	1.00E+00	9.22E-01	7.58E-01	9.74E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.42E-01	1.00E+00	9.95E-01
3.00E+06	1.00E+00	9.83E-01	1.00E+00	9.93E-01	1.00E+00	8.76E-01	6.87E-01	9.69E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.12E-01	1.00E+00	9.94E-01
5.00E+06	1.00E+00	9.73E-01	1.00E+00	9.85E-01	1.00E+00	8.08E-01	6.08E-01	9.40E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	8.78E-01	1.00E+00	9.89E-01
7.00E+06	1.00E+00	9.68E-01	1.00E+00	9.84E-01	1.00E+00	7.62E-01	5.59E-01	9.24E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	8.62E-01	1.00E+00	9.86E-01
1.00E+07	1.00E+00	9.56E-01	9.99E-01	9.78E-01	1.00E+00	6.36E-01	4.50E-01	8.83E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	8.19E-01	1.00E+00	9.78E-01
2.00E+07	1.00E+00	8.83E-01	9.92E-01	9.35E-01	1.00E+00	4.02E-01	2.48E-01	7.27E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	6.15E-01	1.00E+00	9.37E-01
3.00E+07	1.00E+00	8.30E-01	9.86E-01	9.04E-01	1.00E+00	2.78E-01	1.93E-01	6.18E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	5.17E-01	1.00E+00	9.01E-01
5.00E+07	1.00E+00	7.21E-01	9.76E-01	8.15E-01	1.00E+00	5.30E-02	3.01E-02	4.26E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	4.05E-01	1.00E+00	8.27E-01
7.00E+07	1.00E+00	5.97E-01	9.56E-01	7.30E-01	1.00E+00	1.02E-02	1.81E-02	2.76E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	3.03E-01	1.00E+00	7.28E-01
1.00E+08	1.00E+00	5.29E-01	9.35E-01	6.25E-01	1.00E+00	3.00E-03	1.63E-02	2.14E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	2.74E-01	1.00E+00	6.29E-01
2.00E+08	1.00E+00	2.51E-01	8.40E-01	3.53E-01	1.00E+00	5.14E-04	2.16E-03	5.18E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.53E-02	1.00E+00	3.23E-01
3.00E+08	1.00E+00	1.36E-01	7.32E-01	2.12E-01	9.99E-01	1.57E-04	1.24E-03	2.67E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	2.95E-02	1.00E+00	1.68E-01
5.00E+08	1.00E+00	4.79E-02	5.31E-01	8.20E-02	9.94E-01			2.69E-03	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.97E-01	9.97E-01		1.00E+00	5.25E-02
7.00E+08	1.00E+00	2.31E-02	3.64E-01	4.30E-02	9.85E-01			6.81E-05	9.99E-01	9.97E-01	1.00E+00	1.00E+00	9.89E-01	9.89E-01		1.00E+00	1.77E-02
1.00E+09	1.00E+00	2.01E-02	2.21E-01	3.72E-02	9.69E-01			6.27E-05	9.99E-01	9.95E-01	1.00E+00	9.99E-01	9.78E-01	9.78E-01		9.99E-01	1.41E-02
2.00E+09	9.95E-01	2.39E-04	9.87E-02	5.88E-04	8.93E-01				9.93E-01	9.55E-01	1.00E+00	9.89E-01	8.26E-01	8.27E-01		9.75E-01	
3.00E+09	9.77E-01	1.32E-04	5.87E-02	3.25E-04	7.79E-01				9.56E-01	8.47E-01	9.95E-01	9.60E-01	5.75E-01	5.72E-01		9.16E-01	
5.00E+09	8.55E-01		1.03E-02		5.30E-01				6.98E-01	5.16E-01	9.14E-01	7.92E-01	3.08E-01	3.07E-01		7.23E-01	
7.00E+09	6.64E-01		6.35E-03		3.71E-01				4.95E-01	3.58E-01	7.07E-01	5.93E-01	1.71E-01	1.71E-01		5.16E-01	
1.00E+10	4.62E-01				2.42E-01				3.32E-01	2.20E-01	4.88E-01	3.84E-01	6.76E-02	6.80E-02		3.28E-01	
2.00E+10	1.22E-01				5.93E-02				2.69E-02	1.52E-02	1.15E-01	9.17E-02	1.92E-05			7.63E-02	
3.00E+10	3.32E-02				1.91E-02				5.89E-04	1.27E-03	1.64E-02	3.57E-02				2.14E-02	
5.00E+10	2.64E-03				1.94E-03					8.65E-06	1.66E-05	2.07E-03				1.13E-03	
7.00E+10																	
1.00E+11																	
2.00E+11																	
3.00E+11																	
5.00E+11																	
7.00E+11																	
1.00E+12																	
Mean	1.15E+10	1.68E+08	8.65E+08	2.24E+08	7.61E+09	2.05E+07	1.60E+07	6.80E+07	8.53E+09	6.87E+09	1.18E+10	1.04E+10	4.41E+09	4.41E+09	7.36E+07	9.32E+09	1.92E+08

TABLE 7 (continued)

Economic	Probability of Exceedence, Farm-Dependent Interdiction Cost (2016 Dollars, Assuming 3% Inflation After 2000)																
Cost ($)	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+06	1.00E+00	4.68E-01	7.94E-01	5.26E-01	1.00E+00	2.12E-01	3.86E-02	4.36E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	3.61E-01	1.00E+00	5.22E-01
2.00E+06	1.00E+00	4.15E-01	6.67E-01	4.62E-01	1.00E+00	9.96E-03	7.14E-03	2.80E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.84E-01	1.00E+00	4.63E-01
3.00E+06	1.00E+00	3.33E-01	5.37E-01	3.81E-01	9.99E-01	1.46E-03	1.33E-03	9.10E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.97E-01	9.97E-01	8.94E-02	1.00E+00	3.68E-01
5.00E+06	1.00E+00	1.94E-01	4.76E-01	2.54E-01	9.91E-01			1.52E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.54E-01	9.55E-01	1.19E-02	1.00E+00	2.32E-01
7.00E+06	1.00E+00	1.11E-01	4.16E-01	1.67E-01	9.81E-01			1.76E-04	1.00E+00	9.78E-01	1.00E+00	1.00E+00	8.90E-01	8.90E-01	2.61E-03	1.00E+00	1.23E-01
1.00E+07	1.00E+00	5.51E-02	3.30E-01	7.56E-02	9.51E-01				9.96E-01	9.46E-01	1.00E+00	9.92E-01	7.45E-01	7.45E-01		9.94E-01	5.13E-02
2.00E+07	9.50E-01	2.44E-04	1.41E-01	2.66E-03	7.95E-01				8.42E-01	7.17E-01	9.47E-01	8.98E-01	5.29E-01	5.29E-01		8.46E-01	
3.00E+07	8.01E-01		1.34E-02		5.37E-01				6.27E-01	5.50E-01	7.67E-01	6.73E-01	4.83E-01	4.86E-01		6.44E-01	
5.00E+07	5.39E-01				2.46E-01				4.59E-01	3.42E-01	5.32E-01	5.25E-01	1.95E-01	1.95E-01		4.83E-01	
7.00E+07	3.83E-01				9.58E-02				2.85E-01	1.33E-01	3.93E-01	3.12E-01	6.18E-02	6.19E-02		2.86E-01	
1.00E+08	1.60E-01				1.12E-02				7.39E-02	1.75E-02	1.33E-01	6.82E-02	4.07E-03	4.09E-03		8.01E-02	
2.00E+08																	
3.00E+08																	
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2.00E+11																	
3.00E+11																	
5.00E+11																	
7.00E+11																	
1.00E+12																	
Mean	8.20E+07	2.61E+06	8.41E+06	3.23E+06	3.76E+07	5.26E+05	3.25E+05	1.21E+06	5.07E+07	4.01E+07	5.98E+07	5.34E+07	3.01E+07	3.02E+07	9.74E+05	5.20E+07	2.90E+06

TABLE 7 (continued)

Economic Cost ($)	Probability of Exceedence, Farm-Dependent Interdiction Cost (2016 Dollars, Assuming 7% Inflation After 2000)																
	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+06	1.00E+00	5.58E-01	9.34E-01	6.51E-01	1.00E+00	4.64E-01	2.66E-01	5.27E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	4.57E-01	1.00E+00	5.96E-01
2.00E+06	1.00E+00	4.57E-01	7.83E-01	5.21E-01	1.00E+00	1.60E-01	3.46E-02	4.15E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	3.41E-01	1.00E+00	5.20E-01
3.00E+06	1.00E+00	4.25E-01	7.20E-01	4.78E-01	1.00E+00	2.55E-02	2.63E-02	3.50E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	2.22E-01	1.00E+00	4.86E-01
5.00E+06	1.00E+00	3.65E-01	5.49E-01	4.02E-01	1.00E+00	2.78E-03	3.75E-03	1.21E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.98E-01	9.98E-01	1.04E-01	1.00E+00	3.90E-01
7.00E+06	1.00E+00	2.25E-01	5.18E-01	3.18E-01	9.99E-01	1.08E-04		5.79E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.86E-01	9.86E-01	3.16E-02	1.00E+00	3.21E-01
1.00E+07	1.00E+00	1.76E-01	4.61E-01	2.36E-01	9.88E-01			1.09E-02	1.00E+00	9.98E-01	1.00E+00	1.00E+00	9.40E-01	9.40E-01	9.24E-03	1.00E+00	2.12E-01
2.00E+07	1.00E+00	4.70E-02	3.10E-01	5.96E-02	9.40E-01				9.92E-01	9.36E-01	9.99E-01	9.87E-01	7.00E-01	6.99E-01		9.91E-01	3.88E-02
3.00E+07	9.83E-01	1.37E-03	2.36E-01	1.04E-02	8.80E-01				9.40E-01	8.41E-01	9.85E-01	9.39E-01	5.47E-01	5.47E-01		9.25E-01	7.85E-04
5.00E+07	8.71E-01		3.88E-02	1.43E-04	5.97E-01				6.72E-01	5.72E-01	8.33E-01	7.46E-01	5.09E-01	5.09E-01		6.82E-01	
7.00E+07	6.39E-01		6.02E-05		4.01E-01				5.48E-01	4.74E-01	6.34E-01	5.82E-01	3.79E-01	3.82E-01		5.64E-01	
1.00E+08	4.98E-01				1.99E-01				4.21E-01	2.80E-01	4.99E-01	4.77E-01	1.42E-01	1.42E-01		4.39E-01	
2.00E+08	1.18E-01				4.09E-03				3.51E-02	4.89E-03	7.72E-02	3.54E-02	1.22E-04	2.07E-04		5.43E-02	
3.00E+08	1.17E-04										1.65E-04						
5.00E+08																	
7.00E+08																	
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3.00E+11																	
5.00E+11																	
7.00E+11																	
1.00E+12																	
Mean	1.14E+08	4.79E+06	1.55E+07	5.95E+06	6.91E+07	9.68E+05	5.98E+05	2.22E+06	9.33E+07	7.38E+07	1.10E+08	9.82E+07	5.53E+07	5.55E+07	1.79E+06	9.57E+07	5.33E+06

TABLE 7 (continued)

Economic	Probability of Exceedence, Population-Dependent Condemnation Cost (2016 Dollars, Assuming 3% Inflation After 2000)																
Cost ($)	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+06	1.00E+00	2.26E-01	6.88E-01	2.84E-01	9.98E-01	7.86E-03	2.47E-02	2.33E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.91E-01	9.91E-01	8.27E-02	1.00E+00	2.27E-01
2.00E+06	1.00E+00	1.70E-01	6.35E-01	2.21E-01	9.96E-01	3.84E-03	1.78E-02	1.53E-02	9.98E-01	9.98E-01	1.00E+00	9.99E-01	9.73E-01	9.73E-01	4.40E-02	9.99E-01	1.57E-01
3.00E+06	1.00E+00	1.40E-01	5.68E-01	1.77E-01	9.95E-01	3.84E-03	1.78E-02	1.53E-02	9.96E-01	9.97E-01	1.00E+00	9.99E-01	9.65E-01	9.65E-01	4.38E-02	9.98E-01	1.26E-01
5.00E+06	9.99E-01	1.38E-01	5.21E-01	1.72E-01	9.95E-01	3.84E-03	1.78E-02	1.53E-02	9.95E-01	9.97E-01	1.00E+00	9.98E-01	9.56E-01	9.56E-01	4.38E-02	9.96E-01	1.25E-01
7.00E+06	9.99E-01	1.38E-01	5.07E-01	1.70E-01	9.94E-01	3.84E-03	1.78E-02	1.53E-02	9.95E-01	9.97E-01	1.00E+00	9.98E-01	9.52E-01	9.52E-01	4.38E-02	9.96E-01	1.25E-01
1.00E+07	9.99E-01	4.18E-02	3.94E-01	6.46E-02	9.94E-01				9.95E-01	9.97E-01	1.00E+00	9.98E-01	9.46E-01	9.45E-01		9.96E-01	9.88E-03
2.00E+07	9.98E-01	2.91E-02	2.62E-01	4.09E-02	9.89E-01				9.89E-01	9.91E-01	9.99E-01	9.95E-01	8.71E-01	8.71E-01		9.93E-01	7.22E-03
3.00E+07	9.98E-01	2.88E-02	2.46E-01	4.05E-02	9.88E-01				9.88E-01	9.88E-01	9.99E-01	9.92E-01	8.46E-01	8.44E-01		9.92E-01	7.11E-03
5.00E+07	9.97E-01	2.60E-02	1.27E-01	3.50E-02	9.78E-01				9.79E-01	9.75E-01	9.98E-01	9.85E-01	7.28E-01	7.26E-01		9.82E-01	7.11E-03
7.00E+07	9.91E-01	2.57E-02	9.97E-02	3.44E-02	9.44E-01				9.52E-01	9.34E-01	9.90E-01	9.65E-01	6.49E-01	6.48E-01		9.56E-01	7.11E-03
1.00E+08	9.84E-01	8.70E-04	7.13E-02	1.74E-03	9.28E-01				9.24E-01	9.01E-01	9.81E-01	9.50E-01	4.97E-01	4.97E-01		9.30E-01	
2.00E+08	9.59E-01				8.88E-01				8.30E-01	8.06E-01	9.39E-01	8.99E-01	2.03E-01	2.03E-01		8.74E-01	
3.00E+08	9.23E-01				8.15E-01				7.34E-01	7.08E-01	8.86E-01	8.44E-01	8.99E-02	8.99E-02		7.93E-01	
5.00E+08	8.72E-01				7.58E-01				6.19E-01	5.90E-01	8.07E-01	7.66E-01	5.35E-02	5.37E-02		6.99E-01	
7.00E+08	7.98E-01				6.01E-01				4.26E-01	3.47E-01	6.97E-01	6.64E-01	1.82E-02	1.82E-02		5.69E-01	
1.00E+09	6.53E-01				5.13E-01				2.73E-01	2.25E-01	4.98E-01	5.68E-01	1.26E-02	1.27E-02		4.54E-01	
2.00E+09	3.41E-01				2.50E-01				9.99E-02	9.43E-02	1.93E-01	2.90E-01	7.31E-03	7.33E-03		2.15E-01	
3.00E+09	1.66E-01				1.21E-01				2.02E-02	2.09E-02	6.30E-02	1.39E-01				9.23E-02	
5.00E+09	9.08E-02				8.24E-02				5.35E-03	1.44E-02	1.12E-02	1.08E-01				7.36E-02	
7.00E+09	3.97E-02				2.67E-02				2.52E-03	2.33E-03	4.14E-03	4.08E-02				2.19E-02	
1.00E+10	8.07E-03				8.42E-03					1.70E-04		1.61E-02				6.21E-03	
2.00E+10	1.69E-03				1.72E-03					6.09E-05		3.86E-03				1.58E-03	
3.00E+10	2.52E-05				3.01E-06							3.18E-04				2.08E-04	
5.00E+10																	
7.00E+10																	
1.00E+11																	
2.00E+11																	
3.00E+11																	
5.00E+11																	
7.00E+11																	
1.00E+12																	
Mean	2.06E+09	3.31E+06	2.08E+07	4.40E+06	1.67E+09	4.77E+04	1.60E+05	1.42E+05	8.50E+08	8.16E+08	1.29E+09	1.93E+09	1.58E+08	1.57E+08	4.85E+05	1.49E+09	1.76E+06

TABLE 7 (continued)

Economic	Probability of Exceedence, Population-Dependent Condemnation Cost (2016 Dollars, Assuming 7% Inflation After 2000)																
Cost ($)	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+06	1.00E+00	3.14E-01	7.16E-01	3.65E-01	9.98E-01	1.83E-02	3.48E-02	3.41E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.97E-01	9.97E-01	1.56E-01	1.00E+00	3.10E-01
2.00E+06	1.00E+00	2.21E-01	6.57E-01	2.76E-01	9.97E-01	7.86E-03	2.47E-02	2.31E-02	9.99E-01	9.99E-01	1.00E+00	1.00E+00	9.88E-01	9.88E-01	8.25E-02	1.00E+00	2.18E-01
3.00E+06	1.00E+00	1.76E-01	6.39E-01	2.28E-01	9.96E-01	3.84E-03	1.78E-02	1.53E-02	9.98E-01	9.98E-01	1.00E+00	9.99E-01	9.75E-01	9.75E-01	4.40E-02	1.00E+00	1.67E-01
5.00E+06	1.00E+00	1.59E-01	5.80E-01	2.01E-01	9.95E-01	3.84E-03	1.78E-02	1.53E-02	9.96E-01	9.97E-01	1.00E+00	9.99E-01	9.66E-01	9.66E-01	4.38E-02	9.98E-01	1.30E-01
7.00E+06	9.99E-01	1.39E-01	5.63E-01	1.74E-01	9.95E-01	3.84E-03	1.78E-02	1.53E-02	9.95E-01	9.97E-01	1.00E+00	9.99E-01	9.62E-01	9.61E-01	4.38E-02	9.98E-01	1.25E-01
1.00E+07	9.99E-01	1.38E-01	5.21E-01	1.71E-01	9.94E-01	3.84E-03	1.78E-02	1.53E-02	9.95E-01	9.97E-01	1.00E+00	9.98E-01	9.54E-01	9.53E-01	4.38E-02	9.96E-01	1.25E-01
2.00E+07	9.99E-01	3.94E-02	3.64E-01	5.87E-02	9.94E-01				9.95E-01	9.97E-01	1.00E+00	9.98E-01	9.43E-01	9.41E-01		9.96E-01	9.36E-03
3.00E+07	9.99E-01	2.91E-02	2.68E-01	4.22E-02	9.91E-01				9.95E-01	9.95E-01	9.99E-01	9.98E-01	9.08E-01	9.08E-01		9.95E-01	7.22E-03
5.00E+07	9.98E-01	2.88E-02	2.59E-01	4.05E-02	9.88E-01				9.88E-01	9.89E-01	9.99E-01	9.93E-01	8.56E-01	8.55E-01		9.93E-01	7.11E-03
7.00E+07	9.98E-01	2.60E-02	1.88E-01	3.50E-02	9.84E-01				9.85E-01	9.81E-01	9.99E-01	9.89E-01	7.91E-01	7.89E-01		9.87E-01	7.11E-03
1.00E+08	9.97E-01	2.60E-02	1.27E-01	3.50E-02	9.73E-01				9.75E-01	9.70E-01	9.97E-01	9.84E-01	6.99E-01	6.98E-01		9.78E-01	7.11E-03
2.00E+08	9.82E-01	8.70E-04	6.98E-02	1.74E-03	9.21E-01				9.13E-01	8.89E-01	9.78E-01	9.48E-01	4.69E-01	4.69E-01		9.25E-01	
3.00E+08	9.69E-01		1.92E-05		8.97E-01				8.64E-01	8.40E-01	9.56E-01	9.15E-01	3.09E-01	3.07E-01		8.91E-01	
5.00E+08	9.36E-01				8.43E-01				7.67E-01	7.51E-01	9.05E-01	8.57E-01	1.23E-01	1.23E-01		8.08E-01	
7.00E+08	8.99E-01				7.79E-01				6.57E-01	6.32E-01	8.49E-01	7.93E-01	6.18E-02	6.09E-02		7.40E-01	
1.00E+09	8.62E-01				7.33E-01				5.92E-01	5.56E-01	7.95E-01	7.49E-01	4.88E-02	4.90E-02		6.82E-01	
2.00E+09	6.33E-01				4.91E-01				2.57E-01	2.15E-01	4.60E-01	5.56E-01	1.26E-02	1.27E-02		4.44E-01	
3.00E+09	4.26E-01				3.26E-01				1.32E-01	1.19E-01	2.61E-01	3.69E-01	7.31E-03	7.33E-03		2.80E-01	
5.00E+09	2.02E-01				1.35E-01				3.18E-02	2.52E-02	8.75E-02	1.53E-01				9.84E-02	
7.00E+09	1.15E-01				9.67E-02				6.48E-03	1.70E-02	1.86E-02	1.24E-01				8.33E-02	
1.00E+10	8.50E-02				8.01E-02				5.35E-03	1.44E-02	1.08E-02	1.07E-01				7.35E-02	
2.00E+10	7.21E-03				6.97E-03					1.02E-04		1.05E-02				4.24E-03	
3.00E+10	4.56E-03				4.33E-03					6.40E-05		4.23E-03				1.68E-03	
5.00E+10	2.52E-05				6.02E-06							3.18E-04				2.08E-04	
7.00E+10																	
1.00E+11																	
2.00E+11																	
3.00E+11																	
5.00E+11																	
7.00E+11																	
1.00E+12																	
Mean	3.79E+09	6.09E+08	3.82E+07	8.10E+06	3.08E+09	8.78E+04	2.95E+05	2.62E+05	1.56E+09	1.50E+09	2.38E+09	3.54E+09	2.90E+08	2.89E+08	8.92E+05	2.73E+09	3.23E+06

TABLE 7 (continued)

Economic	Probability of Exceedence, Farm-Dependent Condemnation Cost (2016 Dollars, Assuming 3% Inflation After 2000)																
Cost ($)	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+06	9.97E-01		2.39E-05		9.81E-01				9.78E-01	9.82E-01	1.00E+00	9.83E-01	6.16E-01	6.16E-01		9.76E-01	
2.00E+06	9.81E-01				9.19E-01				9.22E-01	8.99E-01	9.93E-01	9.37E-01	1.53E-01	1.53E-01		9.12E-01	
3.00E+06	9.59E-01				8.62E-01				8.25E-01	8.00E-01	9.86E-01	8.81E-01	8.60E-02	8.62E-02		8.44E-01	
5.00E+06	8.54E-01				6.16E-01				4.81E-01	3.14E-01	9.28E-01	7.15E-01	9.29E-04	6.10E-04		6.14E-01	
7.00E+06	7.19E-01				5.39E-01				2.45E-01	1.66E-01	8.22E-01	6.36E-01				4.79E-01	
1.00E+07	5.14E-01				4.60E-01				5.28E-02	1.09E-01	6.84E-01	5.92E-01				4.41E-01	
2.00E+07	1.60E-01				6.32E-02				1.47E-03	2.97E-03	3.14E-01	9.91E-02				4.10E-02	
3.00E+07	3.99E-02				4.13E-02					8.91E-04	1.09E-01	7.88E-02				2.59E-02	
5.00E+07	1.22E-02				1.03E-02						4.06E-02	1.52E-02				5.73E-03	
7.00E+07	2.28E-03				7.66E-04						9.08E-03	2.16E-03				2.71E-04	
1.00E+08	2.48E-04				2.30E-04						8.56E-05						
2.00E+08																	
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2.00E+11																	
3.00E+11																	
5.00E+11																	
7.00E+11																	
1.00E+12																	
Mean	1.33E+07	3.14E+04	1.90E+05	3.97E+04	1.10E+07	1.16E+03	1.96E+03	3.95E+04	5.41E+06	5.43E+06	1.82E+07	1.37E+07	1.38E+06	1.38E+06	9.82E+03	1.02E+07	3.19E+04

TABLE 7 (continued)

Economic Cost ($)	Probability of Exceedence, Farm-Dependent Condemnation Cost (2016 Dollars, Assuming 7% Inflation After 2000)																
	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+06	9.99E-01		5.86E-02		9.90E-01				9.92E-01	9.94E-01	1.00E+00	9.95E-01	8.43E-01	8.42E-01		9.91E-01	
2.00E+06	9.96E-01				9.76E-01				9.77E-01	9.80E-01	1.00E+00	9.81E-01	5.75E-01	5.75E-01		9.74E-01	
3.00E+06	9.90E-01				9.51E-01				9.53E-01	9.47E-01	9.96E-01	9.59E-01	2.70E-01	2.71E-01		9.49E-01	
5.00E+06	9.70E-01				8.76E-01				8.55E-01	8.21E-01	9.88E-01	9.01E-01	8.80E-02	8.69E-02		8.62E-01	
7.00E+06	9.24E-01				7.72E-01				7.38E-01	6.57E-01	9.70E-01	8.35E-01	5.35E-02	5.26E-02		7.81E-01	
1.00E+07	8.21E-01				5.79E-01				3.91E-01	2.23E-01	9.04E-01	6.77E-01	1.35E-04	1.49E-04		5.53E-01	
2.00E+07	4.92E-01				4.57E-01				4.39E-02	1.06E-01	6.71E-01	5.77E-01				4.31E-01	
3.00E+07	3.74E-01				2.35E-01				9.42E-03	4.52E-02	5.71E-01	3.67E-01				2.29E-01	
5.00E+07	4.13E-02				4.29E-02					9.27E-04	1.14E-01	8.29E-02				2.78E-02	
7.00E+07	3.03E-02				2.53E-02					1.88E-04	8.57E-02	3.34E-02				1.17E-02	
1.00E+08	6.81E-03				6.46E-03						3.04E-02	1.34E-02				4.64E-03	
2.00E+08					7.85E-06						1.43E-05						
3.00E+08																	
5.00E+08																	
7.00E+08																	
1.00E+09																	
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7.00E+10																	
1.00E+11																	
2.00E+11																	
3.00E+11																	
5.00E+11																	
7.00E+11																	
1.00E+12																	
Mean	2.44E+07	5.78E+04	3.49E+05	7.30E+04	2.03E+07	2.14E+03	3.60E+03	7.26E+04	9.95E+06	9.99E+06	3.34E+07	2.52E+07	2.53E+06	2.53E+06	1.81E+04	1.88E+07	5.87E+04

TABLE 7 (continued)

Economic Cost ($)	Probability of Exceedence, Emergency Phase Cost (2016 Dollars, Assuming 3% Inflation After 2000)																
	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+06	1.00E+00	1.05E-01	1.21E-01	1.12E-02	9.30E-01	8.70E-04		6.58E-02	9.88E-01	9.65E-01	1.00E+00	1.00E+00	8.99E-01	8.97E-01	1.47E-02	9.90E-01	1.10E-01
2.00E+06	9.97E-01	6.68E-03	1.37E-03		8.78E-01			3.71E-04	9.65E-01	9.11E-01	9.99E-01	9.98E-01	7.86E-01	7.81E-01		9.74E-01	4.46E-04
3.00E+06	9.94E-01	4.95E-03			8.20E-01				9.36E-01	8.58E-01	9.99E-01	9.97E-01	6.62E-01	6.54E-01		9.52E-01	
5.00E+06	9.81E-01	4.00E-03			7.36E-01				8.70E-01	7.85E-01	9.97E-01	9.93E-01	5.06E-01	5.01E-01		9.08E-01	
7.00E+06	9.57E-01	8.56E-04			5.94E-01				7.62E-01	6.21E-01	9.88E-01	9.74E-01	3.07E-01	2.99E-01		8.36E-01	
1.00E+07	9.15E-01	6.71E-04			5.09E-01				6.39E-01	4.94E-01	9.74E-01	9.48E-01	1.72E-01	1.67E-01		7.51E-01	
2.00E+07	6.49E-01				2.23E-01				3.23E-01	2.34E-01	8.82E-01	7.61E-01	5.34E-02	5.24E-02		4.18E-01	
3.00E+07	4.03E-01				1.10E-01				1.45E-01	1.03E-01	7.59E-01	5.42E-01	2.47E-03	2.10E-03		2.13E-01	
5.00E+07	2.19E-01				7.03E-02				8.33E-02	6.43E-02	5.41E-01	2.90E-01	4.22E-04	4.22E-04		1.18E-01	
7.00E+07	1.01E-01				1.49E-02				2.08E-02	1.37E-02	3.70E-01	1.76E-01				4.17E-02	
1.00E+08	4.27E-02				4.70E-03				5.13E-03	4.26E-03	2.29E-01	1.03E-01				1.28E-02	
2.00E+08	3.19E-03								4.28E-04		8.93E-02	2.03E-02				1.33E-03	
3.00E+08	1.20E-03								2.00E-04		3.12E-02	8.47E-03				2.00E-04	
5.00E+08																	
7.00E+08																	
1.00E+09																	
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2.00E+11																	
3.00E+11																	
5.00E+11																	
7.00E+11																	
1.00E+12																	
Mean	3.61E+07	3.00E+05	3.40E+05	8.96E+04	1.52E+07	1.54E+04	2.65E+04	2.42E+05	1.89E+07	1.52E+07	7.93E+07	4.87E+07	6.32E+06	6.22E+06	9.11E+04	2.37E+07	3.11E+05

TABLE 7 (continued)

Economic Cost ($)	Probability of Exceedence, Emergency Phase Cost (2016 Dollars, Assuming 7% Inflation After 2000)																
	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+06	1.00E+00	2.04E-01	2.71E-01	6.85E-02	9.65E-01	6.10E-03	1.86E-02	1.83E-01	9.98E-01	9.88E-01	1.00E+00	1.00E+00	9.60E-01	9.59E-01	6.59E-02	9.97E-01	2.48E-01
2.00E+06	9.99E-01	7.63E-02	9.34E-02	8.70E-04	9.25E-01			3.06E-02	9.85E-01	9.62E-01	1.00E+00	1.00E+00	8.83E-01	8.81E-01	5.06E-03	9.90E-01	7.81E-02
3.00E+06	9.99E-01	6.69E-03	4.64E-03		8.93E-01			3.95E-03	9.76E-01	9.30E-01	1.00E+00	9.98E-01	8.31E-01	8.28E-01		9.82E-01	2.54E-03
5.00E+06	9.95E-01	4.95E-03			8.31E-01				9.48E-01	8.75E-01	9.99E-01	9.98E-01	6.97E-01	6.92E-01		9.59E-01	
7.00E+06	9.89E-01	4.84E-03			7.70E-01				9.00E-01	8.22E-01	9.97E-01	9.96E-01	5.74E-01	5.67E-01		9.30E-01	
1.00E+07	9.76E-01	1.37E-03			6.98E-01				8.55E-01	7.51E-01	9.97E-01	9.89E-01	4.73E-01	4.68E-01		8.99E-01	
2.00E+07	8.97E-01	5.42E-04			4.55E-01				5.99E-01	4.56E-01	9.68E-01	9.33E-01	1.49E-01	1.45E-01		7.24E-01	
3.00E+07	7.49E-01	5.42E-04			3.09E-01				4.29E-01	3.01E-01	9.22E-01	8.43E-01	7.81E-02	7.49E-02		5.29E-01	
5.00E+07	4.58E-01				1.18E-01				1.69E-01	1.15E-01	7.93E-01	6.03E-01	7.67E-03	6.88E-03		2.48E-01	
7.00E+07	2.90E-01				9.62E-02				1.06E-01	8.59E-02	6.60E-01	4.15E-01	5.55E-04	5.55E-04		1.52E-01	
1.00E+08	1.98E-01				6.29E-02				7.62E-02	5.88E-02	4.90E-01	2.59E-01	4.22E-04	4.22E-04		1.09E-01	
2.00E+08	3.53E-02				4.46E-03				4.81E-03	3.70E-03	1.96E-01	8.47E-02				1.07E-02	
3.00E+08	1.54E-02				2.20E-03				1.75E-03	1.81E-03	1.13E-01	4.47E-02				4.66E-03	
5.00E+08	1.20E-03								2.00E-04		4.07E-02	8.70E-03				2.00E-04	
7.00E+08											9.50E-03	1.01E-03					
1.00E+09																	
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7.00E+11																	
1.00E+12																	
Mean	6.84E+07	5.52E+05	6.26E+05	1.65E+05	2.79E+07	2.83E+04	4.88E+04	4.46E+05	3.48E+07	2.80E+07	1.46E+08	8.95E+07	1.16E+07	1.14E+07	1.68E+05	4.36E+07	5.73E+05

TABLE 7 (continued)

Economic Cost ($)	Probability of Exceedence, Milk Disposal Cost (2016 Dollars, Assuming 3% Inflation After 2000)																
	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+06	3.16E-01		6.88E-04		1.24E-01				2.58E-01	1.57E-01	3.04E-01	2.25E-01	1.05E-01	1.06E-01		2.57E-01	
2.00E+06	5.28E-02				3.49E-03				2.27E-02	1.00E-02	4.72E-02	1.37E-02	1.22E-04	1.60E-04		2.30E-02	
3.00E+06																	
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7.00E+11																	
1.00E+12																	
Mean	8.21E+05	2.08E+04	1.26E+05	6.73E+04	4.91E+05	6.28E+03	4.20E+03	8.45E+03	6.96E+05	5.27E+05	7.95E+05	6.35E+05	4.04E+05	4.07E+05	1.36E+04	6.84E+05	3.46E+04

TABLE 7 (continued)

Economic Cost ($)	Probability of Exceedence, Milk Disposal Cost (2016 Dollars, Assuming 7% Inflation After 2000)																
	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+06	5.46E-01		4.80E-02	1.37E-03	3.00E-01				4.64E-01	3.51E-01	5.38E-01	4.50E-01	2.73E-01	2.75E-01		4.72E-01	
2.00E+06	2.89E-01		6.58E-04		1.09E-01				2.35E-01	1.30E-01	2.73E-01	1.93E-01	8.59E-02	8.65E-02		2.31E-01	
3.00E+06	1.38E-01				2.89E-02				8.47E-02	3.30E-02	1.35E-01	6.03E-02	1.64E-02	1.48E-02		9.08E-02	
5.00E+06	2.83E-04										1.65E-04						
7.00E+06																	
1.00E+07																	
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7.00E+11																	
1.00E+12																	
Mean	1.51E+06	3.82E+04	2.33E+05	1.24E+05	9.03E+05	1.16E+04	7.74E+03	1.55E+04	1.28E+06	9.70E+05	1.46E+06	1.17E+06	7.42E+05	7.49E+05	2.51E+04	1.26E+06	6.37E+04

TABLE 7 (continued)

Economic	Probability of Exceedence, Crop Disposal Cost (2016 Dollars, Assuming 3% Inflation After 2000)																
Cost ($)	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+06	1.00E+00	5.18E-01	8.33E-01	5.91E-01	1.00E+00	3.92E-01	1.51E-01	5.25E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	4.39E-01	1.00E+00	5.73E-01
2.00E+06	1.00E+00	4.32E-01	7.39E-01	5.00E-01	1.00E+00	7.30E-02	3.68E-02	4.10E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	2.46E-01	1.00E+00	5.07E-01
3.00E+06	1.00E+00	4.12E-01	7.11E-01	4.67E-01	1.00E+00	3.85E-03	3.33E-02	3.55E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.98E-01	9.98E-01	2.00E-01	1.00E+00	4.68E-01
5.00E+06	1.00E+00	2.22E-01	5.15E-01	3.26E-01	1.00E+00	6.48E-05	3.44E-05	1.30E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.85E-01	9.85E-01	3.38E-02	1.00E+00	3.44E-01
7.00E+06	1.00E+00	2.08E-01	4.90E-01	2.63E-01	9.95E-01			7.13E-02	1.00E+00	9.98E-01	1.00E+00	1.00E+00	9.64E-01	9.64E-01	1.74E-02	1.00E+00	2.63E-01
1.00E+07	1.00E+00	8.01E-02	4.07E-01	1.24E-01	9.83E-01			4.07E-03	1.00E+00	9.84E-01	1.00E+00	1.00E+00	9.07E-01	9.08E-01		1.00E+00	1.40E-01
2.00E+07	9.93E-01	6.71E-03	2.33E-01	2.38E-02	9.00E-01				9.78E-01	9.14E-01	1.00E+00	9.61E-01	6.40E-01	6.41E-01		9.71E-01	1.26E-02
3.00E+07	9.51E-01		1.59E-02		7.05E-01				8.93E-01	7.20E-01	9.65E-01	8.66E-01	5.21E-01	5.21E-01		8.22E-01	
5.00E+07	7.00E-01				3.00E-01				5.79E-01	4.12E-01	7.08E-01	5.46E-01	3.03E-01	3.11E-01		5.32E-01	
7.00E+07	4.55E-01				8.92E-02				3.58E-01	1.90E-01	4.68E-01	4.11E-01	1.18E-01	1.18E-01		3.72E-01	
1.00E+08	2.06E-01				1.30E-02				1.05E-01	3.57E-02	2.15E-01	9.72E-02	2.24E-03	2.24E-03		1.35E-01	
2.00E+08																	
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7.00E+11																	
1.00E+12																	
Mean	7.29E+07	3.42E+06	1.02E+07	4.44E+06	4.27E+07	7.74E+05	4.95E+05	2.28E+06	6.17E+07	4.80E+07	7.27E+07	6.16E+07	3.71E+07	3.72E+07	1.42E+06	6.09E+07	4.34E+06

TABLE 7 (continued)

Economic Cost ($)	Probability of Exceedence, Crop Disposal Cost (2016 Dollars, Assuming 7% Inflation After 2000)																
	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+06	1.00E+00	6.17E-01	9.47E-01	7.47E-01	1.00E+00	5.13E-01	3.55E-01	5.43E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	4.95E-01	1.00E+00	6.89E-01
2.00E+06	1.00E+00	5.10E-01	8.03E-01	5.57E-01	1.00E+00	3.57E-01	9.66E-02	5.18E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	4.22E-01	1.00E+00	5.45E-01
3.00E+06	1.00E+00	4.52E-01	7.44E-01	5.22E-01	1.00E+00	1.70E-01	3.92E-02	4.65E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	3.18E-01	1.00E+00	5.21E-01
5.00E+06	1.00E+00	4.18E-01	7.12E-01	4.74E-01	1.00E+00	8.94E-03	3.33E-02	3.60E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.99E-01	9.99E-01	2.03E-01	1.00E+00	4.77E-01
7.00E+06	1.00E+00	3.57E-01	5.84E-01	4.49E-01	1.00E+00	1.13E-03	1.49E-03	2.96E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.95E-01	9.95E-01	1.46E-01	1.00E+00	4.47E-01
1.00E+07	1.00E+00	2.19E-01	5.06E-01	2.84E-01	9.99E-01	1.22E-06	9.80E-07	9.04E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.78E-01	9.78E-01	2.58E-02	1.00E+00	3.06E-01
2.00E+07	1.00E+00	7.22E-02	3.93E-01	1.03E-01	9.76E-01			1.96E-03	1.00E+00	9.79E-01	1.00E+00	9.99E-01	8.90E-01	8.92E-01		1.00E+00	1.24E-01
3.00E+07	9.97E-01	1.53E-02	2.81E-01	3.35E-02	9.34E-01				9.94E-01	9.45E-01	1.00E+00	9.81E-01	7.36E-01	7.36E-01		9.84E-01	2.30E-02
5.00E+07	9.73E-01		4.84E-02		7.70E-01				9.18E-01	8.12E-01	9.73E-01	9.13E-01	5.38E-01	5.39E-01		8.85E-01	2.28E-04
7.00E+07	8.89E-01		5.95E-04		5.25E-01				7.61E-01	5.76E-01	8.97E-01	7.09E-01	4.67E-01	4.70E-01		6.66E-01	
1.00E+08	6.45E-01				2.59E-01				5.35E-01	3.78E-01	6.47E-01	5.22E-01	2.40E-01	2.44E-01		5.04E-01	
2.00E+08	1.33E-01				1.29E-02				4.91E-02	2.76E-03	1.41E-01	5.49E-02	6.28E-04	6.28E-04		9.87E-02	
3.00E+08	6.77E-03										5.51E-03						
5.00E+08																	
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1.00E+12																	
Mean	1.34E+08	6.29E+06	1.88E+07	8.17E+06	7.86E+07	1.42E+06	9.11E+05	4.19E+06	1.14E+08	8.84E+07	1.34E+08	1.13E+08	6.83E+07	6.85E+07	2.62E+06	1.12E+08	7.99E+06

TABLE 7 (continued)

Area	Probability of Exceedence, Farm Decontamination (Hectares)																
Hectares	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+03	1.00E+00	1.48E-01	8.86E-01	2.83E-01	1.00E+00			7.89E-03	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00		1.00E+00	2.63E-01
2.00E+03	1.00E+00	1.30E-01	7.86E-01	2.17E-01	1.00E+00			5.47E-04	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00		1.00E+00	1.04E-01
3.00E+03	1.00E+00	6.01E-03	5.28E-01	2.10E-02	1.00E+00				1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00		1.00E+00	1.64E-02
5.00E+03	1.00E+00	1.79E-03	3.84E-01	4.42E-03	9.97E-01				1.00E+00	9.99E-01	1.00E+00	1.00E+00	9.86E-01	9.86E-01		1.00E+00	
7.00E+03	1.00E+00	4.22E-04	1.82E-01	1.21E-03	9.87E-01				1.00E+00	9.93E-01	1.00E+00	1.00E+00	9.65E-01	9.65E-01		1.00E+00	
1.00E+04	1.00E+00		7.26E-02		9.80E-01				9.99E-01	9.84E-01	1.00E+00	1.00E+00	9.11E-01	9.11E-01		1.00E+00	
2.00E+04	9.85E-01		3.50E-03		7.52E-01				9.75E-01	8.79E-01	9.97E-01	9.84E-01	5.95E-01	5.98E-01		9.37E-01	
3.00E+04	9.14E-01				4.96E-01				8.21E-01	5.40E-01	9.52E-01	8.99E-01	1.69E-01	1.69E-01		7.31E-01	
5.00E+04	4.20E-01				6.52E-02				1.76E-01	4.73E-02	4.75E-01	2.84E-01	1.16E-03	1.16E-03		2.09E-01	
7.00E+04	9.28E-02				1.02E-02				4.77E-03	1.78E-04	8.02E-02	4.66E-02				2.76E-02	
1.00E+05	1.10E-02										4.79E-03						
2.00E+05																	
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Mean	4.88E+04	8.09E+02	4.45E+03	1.11E+03	3.01E+04	1.56E+02	1.10E+02	3.88E+02	3.98E+04	3.18E+04	5.07E+04	4.41E+04	2.21E+04	2.21E+04	3.70E+02	3.93E+04	9.57E+02

TABLE 7 (continued)

Population Impacted	Probability of Exceedence, Population Decontamination (Individuals)																
	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+03	1.00E+00	7.83E-01	9.82E-01	8.72E-01	1.00E+00	2.51E-01	1.54E-01	6.08E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	5.00E-01	1.00E+00	8.76E-01
2.00E+03	1.00E+00	6.18E-01	9.57E-01	7.38E-01	1.00E+00	1.82E-02	1.95E-02	3.21E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	3.36E-01	1.00E+00	7.52E-01
3.00E+03	1.00E+00	5.27E-01	9.36E-01	6.21E-01	1.00E+00	3.71E-03	1.79E-02	2.26E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	2.80E-01	1.00E+00	6.35E-01
5.00E+03	1.00E+00	2.73E-01	8.63E-01	4.17E-01	1.00E+00	7.99E-04	4.70E-03	9.38E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.30E-01	1.00E+00	4.02E-01
7.00E+03	1.00E+00	2.05E-01	7.92E-01	3.09E-01	9.99E-01	5.14E-04	2.16E-03	5.08E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.52E-02	1.00E+00	2.76E-01
1.00E+04	1.00E+00	1.22E-01	6.79E-01	1.89E-01	9.98E-01	1.57E-04	1.24E-03	2.80E-02	1.00E+00	9.99E-01	1.00E+00	1.00E+00	9.99E-01	9.99E-01	3.25E-02	1.00E+00	1.54E-01
2.00E+04	1.00E+00	2.38E-02	3.79E-01	4.85E-02	9.78E-01			1.01E-03	9.99E-01	9.97E-01	1.00E+00	1.00E+00	9.87E-01	9.87E-01		9.99E-01	2.83E-02
3.00E+04	9.99E-01	2.27E-02	2.38E-01	4.11E-02	9.40E-01			6.81E-05	9.97E-01	9.85E-01	1.00E+00	9.97E-01	9.64E-01	9.64E-01		9.94E-01	1.62E-02
5.00E+04	9.92E-01	6.15E-04	1.24E-01	1.74E-03	8.37E-01				9.85E-01	9.34E-01	9.98E-01	9.88E-01	8.34E-01	8.36E-01		9.66E-01	7.82E-04
7.00E+04	9.62E-01	2.39E-04	9.00E-02	5.88E-04	7.28E-01				9.52E-01	8.33E-01	9.87E-01	9.61E-01	6.84E-01	6.85E-01		9.14E-01	
1.00E+05	8.78E-01	1.32E-04	5.87E-02	3.25E-04	5.70E-01				8.16E-01	6.47E-01	9.45E-01	8.68E-01	4.76E-01	4.75E-01		7.90E-01	
2.00E+05	5.15E-01		6.35E-03		2.55E-01				4.04E-01	2.75E-01	5.83E-01	4.71E-01	1.66E-01	1.65E-01		4.08E-01	
3.00E+05	2.86E-01				1.19E-01				1.97E-01	1.20E-01	3.14E-01	2.33E-01	6.46E-02	6.44E-02		2.09E-01	
5.00E+05	7.53E-02				1.36E-02				2.55E-02	6.07E-03	8.48E-02	5.13E-02	1.25E-03	1.25E-03		4.21E-02	
7.00E+05	6.50E-03				1.60E-04						2.97E-03	5.07E-06				1.20E-03	
1.00E+06																	
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5.00E+08																	
7.00E+08																	
1.00E+09																	
Mean	2.48E+05	5.20E+03	2.74E+04	7.07E+03	1.51E+05	6.54E+02	5.13E+02	2.27E+03	2.04E+05	1.61E+05	2.64E+05	2.26E+05	1.24E+05	1.24E+05	2.43E+03	2.06E+05	6.15E+03

TABLE 7 (continued)

Area	Probability of Exceedence, Farm Interdiction (Hectares)																
Hectares	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+03	1.00E+00	5.37E-01	9.66E-01	6.61E-01	1.00E+00	2.21E-01	3.97E-02	4.89E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	3.56E-01	1.00E+00	6.37E-01
2.00E+03	1.00E+00	4.81E-01	9.14E-01	5.69E-01	1.00E+00	5.04E-03	3.33E-02	3.58E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	2.02E-01	1.00E+00	5.23E-01
3.00E+03	1.00E+00	2.98E-01	7.94E-01	4.27E-01	1.00E+00	2.37E-04	9.95E-05	2.43E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.43E-02	1.00E+00	4.34E-01
5.00E+03	1.00E+00	2.08E-01	6.73E-01	2.65E-01	1.00E+00			7.14E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.98E-01	9.98E-01	1.74E-02	1.00E+00	2.62E-01
7.00E+03	1.00E+00	1.18E-01	4.96E-01	1.66E-01	9.99E-01			1.29E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.91E-01	9.91E-01	4.46E-03	1.00E+00	1.64E-01
1.00E+04	1.00E+00	5.97E-02	3.64E-01	7.69E-02	9.95E-01			1.12E-04	9.99E-01	1.00E+00	1.00E+00	1.00E+00	9.78E-01	9.78E-01		1.00E+00	6.39E-02
2.00E+04	9.91E-01	1.37E-03	1.15E-01	7.28E-03	8.52E-01				9.91E-01	9.58E-01	9.97E-01	9.88E-01	8.30E-01	8.30E-01		9.86E-01	1.58E-03
3.00E+04	9.50E-01		4.29E-03		6.36E-01				9.26E-01	7.74E-01	9.75E-01	9.52E-01	5.65E-01	5.68E-01		8.87E-01	
5.00E+04	6.61E-01				1.83E-01				4.92E-01	2.98E-01	6.91E-01	5.70E-01	1.71E-01	1.72E-01		4.87E-01	
7.00E+04	3.12E-01				5.08E-02				2.34E-01	1.02E-01	3.33E-01	2.49E-01	4.59E-02	4.59E-02		2.38E-01	
1.00E+05	1.15E-01				7.37E-03				3.07E-02	5.56E-03	7.72E-02	2.81E-02	2.07E-04	2.07E-04		5.73E-02	
2.00E+05																	
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5.00E+08																	
7.00E+08																	
1.00E+09																	
Mean	6.36E+04	2.89E+03	9.54E+03	3.72E+03	3.71E+04	5.94E+02	3.80E+02	1.74E+03	5.48E+04	4.40E+04	6.37E+04	5.68E+04	3.54E+04	3.55E+04	1.15E+03	5.50E+04	3.52E+03

TABLE 7 (continued)

Population	Probability of Exceedence, Population Interdiction (Individuals)																
Impacted	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+03	1.00E+00	7.83E-01	9.82E-01	8.72E-01	1.00E+00	2.51E-01	1.54E-01	6.08E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	5.00E-01	1.00E+00	8.76E-01
2.00E+03	1.00E+00	6.18E-01	9.57E-01	7.38E-01	1.00E+00	1.82E-02	1.95E-02	3.21E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	3.36E-01	1.00E+00	7.52E-01
3.00E+03	1.00E+00	5.27E-01	9.36E-01	6.21E-01	1.00E+00	3.71E-03	1.79E-02	2.26E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	2.80E-01	1.00E+00	6.35E-01
5.00E+03	1.00E+00	2.73E-01	8.63E-01	4.17E-01	1.00E+00	7.99E-04	4.70E-03	9.38E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.30E-01	1.00E+00	4.02E-01
7.00E+03	1.00E+00	2.05E-01	7.92E-01	3.09E-01	9.99E-01	5.14E-04	2.16E-03	5.08E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.52E-02	1.00E+00	2.76E-01
1.00E+04	1.00E+00	1.22E-01	6.79E-01	1.89E-01	9.98E-01	1.57E-04	1.24E-03	2.80E-02	1.00E+00	9.99E-01	1.00E+00	1.00E+00	9.99E-01	9.99E-01	3.25E-02	1.00E+00	1.54E-01
2.00E+04	1.00E+00	2.38E-02	3.79E-01	4.85E-02	9.78E-01			1.01E-03	9.99E-01	9.97E-01	1.00E+00	1.00E+00	9.87E-01	9.87E-01		9.99E-01	2.83E-02
3.00E+04	9.99E-01	2.27E-02	2.38E-01	4.11E-02	9.40E-01			6.81E-05	9.97E-01	9.85E-01	1.00E+00	9.97E-01	9.64E-01	9.64E-01		9.94E-01	1.62E-02
5.00E+04	9.92E-01	6.15E-04	1.24E-01	1.74E-03	8.37E-01				9.85E-01	9.34E-01	9.98E-01	9.88E-01	8.34E-01	8.36E-01		9.66E-01	7.82E-04
7.00E+04	9.62E-01	2.39E-04	9.00E-02	5.88E-04	7.28E-01				9.52E-01	8.33E-01	9.87E-01	9.61E-01	6.84E-01	6.85E-01		9.14E-01	
1.00E+05	8.78E-01	1.32E-04	5.87E-02	3.25E-04	5.70E-01				8.16E-01	6.47E-01	9.45E-01	8.68E-01	4.76E-01	4.75E-01		7.90E-01	
2.00E+05	5.15E-01		6.35E-03		2.55E-01				4.04E-01	2.75E-01	5.83E-01	4.71E-01	1.66E-01	1.65E-01		4.08E-01	
3.00E+05	2.86E-01				1.19E-01				1.97E-01	1.20E-01	3.14E-01	2.33E-01	6.46E-02	6.44E-02		2.09E-01	
5.00E+05	7.53E-02				1.36E-02				2.55E-02	6.07E-03	8.48E-02	5.13E-02	1.25E-03	1.25E-03		4.21E-02	
7.00E+05	6.50E-03				1.60E-04						2.97E-03	5.07E-06				1.20E-03	
1.00E+06																	
2.00E+06																	
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7.00E+08																	
1.00E+09																	
Mean	2.48E+05	5.20E+03	2.74E+04	7.07E+03	1.51E+05	6.54E+02	5.13E+02	2.27E+03	2.04E+05	1.61E+05	2.64E+05	2.26E+05	1.24E+05	1.24E+05	2.43E+03	2.06E+05	6.15E+03

TABLE 7 (continued)

Area	Probability of Exceedence, Farm Condemnation (Hectares)																
Hectares	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+03	7.70E-01				5.55E-01				3.08E-01	1.78E-01	8.65E-01	6.45E-01				4.92E-01	
2.00E+03	4.64E-01				4.50E-01				2.64E-02	1.04E-01	6.52E-01	5.72E-01				4.25E-01	
3.00E+03	2.57E-01				1.16E-01				5.44E-03	1.21E-02	4.60E-01	1.20E-01				5.81E-02	
5.00E+03	3.83E-02				4.11E-02					8.91E-04	1.09E-01	7.76E-02				2.59E-02	
7.00E+03	1.51E-02				1.55E-02					1.11E-04	5.08E-02	2.65E-02				1.05E-02	
1.00E+04	5.25E-03				3.65E-03						2.11E-02	4.91E-03				1.63E-03	
2.00E+04																	
3.00E+04																	
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3.00E+08																	
5.00E+08																	
7.00E+08																	
1.00E+09																	
Mean	2.15E+03	5.10E+00	3.08E+01	6.44E+00	1.79E+03	1.89E-01	3.17E-01	6.41E+00	8.78E+02	8.81E+02	2.93E+03	2.21E+03	2.24E+02	2.23E+02	1.59E+00	1.66E+03	5.18E+00

TABLE 7 (continued)

Population Impacted	Probability of Exceedence, Population Condemnation (Individuals)																
	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+03	9.73E-01		1.92E-05		9.04E-01				8.76E-01	8.55E-01	9.60E-01	9.27E-01	3.66E-01	3.64E-01		9.04E-01	
2.00E+03	9.26E-01				8.17E-01				7.40E-01	7.16E-01	8.89E-01	8.49E-01	9.39E-02	9.37E-02		7.96E-01	
3.00E+03	8.84E-01				7.67E-01				6.37E-01	6.13E-01	8.25E-01	7.74E-01	5.50E-02	5.48E-02		7.12E-01	
5.00E+03	7.81E-01				5.89E-01				3.98E-01	3.36E-01	6.77E-01	6.47E-01	1.70E-02	1.71E-02		5.50E-01	
7.00E+03	6.50E-01				5.11E-01				2.69E-01	2.23E-01	4.90E-01	5.65E-01	1.26E-02	1.27E-02		4.53E-01	
1.00E+04	4.71E-01				3.51E-01				1.56E-01	1.33E-01	2.99E-01	3.86E-01	7.34E-03	7.37E-03		2.95E-01	
2.00E+04	1.76E-01				1.23E-01				2.62E-02	2.27E-02	7.90E-02	1.43E-01				9.36E-02	
3.00E+04	1.00E-01				9.15E-02				5.62E-03	1.67E-02	1.41E-02	1.21E-01				8.18E-02	
5.00E+04	2.98E-02				1.55E-02				9.76E-04	7.28E-04	2.37E-03	2.33E-02				8.90E-03	
7.00E+04	7.88E-03				8.41E-03					1.70E-04		1.61E-02				6.21E-03	
1.00E+05	4.87E-03				5.03E-03					7.92E-05		9.23E-03				4.10E-03	
2.00E+05	2.52E-05				3.01E-06							3.18E-04				2.08E-04	
3.00E+05																	
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5.00E+08																	
7.00E+08																	
1.00E+09																	
Mean	1.42E+04	2.28E+01	1.43E+02	3.03E+01	1.15E+04	3.29E-01	1.10E+00	9.80E-01	5.86E+03	5.63E+03	8.90E+03	1.33E+04	1.09E+03	1.08E+03	3.34E+00	1.02E+04	1.21E+01

TABLE 7 (continued)

Area	Probability of Exceedence, Milk Disposal Area (Hectares)																
Hectares	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+03	1.00E+00	4.26E-01	7.10E-01	5.35E-01	1.00E+00	3.70E-01	1.40E-01	4.12E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.99E-01	9.99E-01	4.54E-01	1.00E+00	5.24E-01
2.00E+03	1.00E+00	3.75E-01	6.87E-01	5.19E-01	1.00E+00	8.61E-02	1.04E-01	2.43E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.84E-01	9.84E-01	3.10E-01	1.00E+00	4.81E-01
3.00E+03	1.00E+00	2.30E-01	5.39E-01	4.96E-01	1.00E+00	3.90E-02	3.15E-03	1.26E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.75E-01	9.75E-01	2.26E-01	1.00E+00	4.46E-01
5.00E+03	1.00E+00	1.52E-01	5.24E-01	3.82E-01	9.93E-01	2.60E-04		1.69E-03	1.00E+00	9.87E-01	1.00E+00	9.99E-01	9.23E-01	9.23E-01	7.03E-02	1.00E+00	3.36E-01
7.00E+03	1.00E+00	8.90E-02	4.92E-01	3.34E-01	9.74E-01	1.38E-04		2.06E-04	1.00E+00	9.63E-01	1.00E+00	9.92E-01	8.22E-01	8.23E-01	3.41E-02	9.92E-01	2.07E-01
1.00E+04	1.00E+00	4.19E-02	4.25E-01	2.44E-01	9.48E-01				9.98E-01	9.29E-01	9.99E-01	9.79E-01	7.20E-01	7.20E-01	8.26E-03	9.70E-01	9.94E-02
2.00E+04	9.59E-01	1.68E-04	2.30E-01	4.50E-02	7.97E-01				9.06E-01	7.73E-01	9.66E-01	8.62E-01	5.54E-01	5.56E-01		8.65E-01	1.63E-03
3.00E+04	8.12E-01		4.14E-02	2.76E-04	5.37E-01				6.88E-01	5.56E-01	7.91E-01	6.04E-01	5.07E-01	5.10E-01		6.15E-01	
5.00E+04	5.33E-01		7.63E-04		2.22E-01				4.71E-01	3.20E-01	5.16E-01	4.63E-01	2.41E-01	2.47E-01		4.77E-01	
7.00E+04	3.69E-01				7.52E-02				3.09E-01	1.22E-01	3.94E-01	2.59E-01	6.99E-02	6.97E-02		2.97E-01	
1.00E+05	1.54E-01				1.15E-02				7.16E-02	1.91E-02	1.43E-01	4.59E-02	4.23E-04	4.64E-04		9.46E-02	
2.00E+05																	
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5.00E+08																	
7.00E+08																	
1.00E+09																	
Mean	6.18E+04	2.09E+03	1.04E+04	5.73E+03	3.70E+04	7.92E+02	5.32E+02	1.07E+03	5.30E+04	4.01E+04	6.06E+04	4.88E+04	3.16E+04	3.19E+04	1.57E+03	5.19E+04	3.61E+03

TABLE 7 (continued)

Area Hectares	Probability of Exceedence, Crop Disposal Area (Hectares)																
	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+03	1.00E+00	4.66E-01	7.46E-01	5.31E-01	1.00E+00	2.21E-01	3.97E-02	4.90E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	3.56E-01	1.00E+00	5.24E-01
2.00E+03	1.00E+00	4.17E-01	7.12E-01	4.70E-01	1.00E+00	5.04E-03	3.33E-02	3.59E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.99E-01	9.99E-01	2.02E-01	1.00E+00	4.76E-01
3.00E+03	1.00E+00	2.97E-01	5.33E-01	4.18E-01	1.00E+00	2.37E-04	9.95E-05	2.43E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.92E-01	9.92E-01	9.44E-02	1.00E+00	4.28E-01
5.00E+03	1.00E+00	2.08E-01	4.90E-01	2.62E-01	9.95E-01			7.14E-02	1.00E+00	9.98E-01	1.00E+00	1.00E+00	9.63E-01	9.63E-01	1.74E-02	1.00E+00	2.62E-01
7.00E+03	1.00E+00	1.18E-01	4.21E-01	1.65E-01	9.87E-01			1.29E-02	1.00E+00	9.86E-01	1.00E+00	1.00E+00	9.09E-01	9.10E-01	4.46E-03	1.00E+00	1.64E-01
1.00E+04	1.00E+00	5.97E-02	3.35E-01	7.69E-02	9.48E-01			1.12E-04	9.99E-01	9.60E-01	1.00E+00	9.92E-01	8.11E-01	8.13E-01		9.99E-01	6.39E-02
2.00E+04	9.77E-01	1.37E-03	1.14E-01	7.28E-03	8.13E-01				9.32E-01	8.27E-01	9.83E-01	9.26E-01	5.57E-01	5.57E-01		8.93E-01	1.58E-03
3.00E+04	8.77E-01		4.30E-03		5.40E-01				7.66E-01	5.85E-01	8.83E-01	6.85E-01	4.70E-01	4.73E-01		6.75E-01	
5.00E+04	5.41E-01				1.82E-01				4.39E-01	2.83E-01	5.44E-01	4.61E-01	1.75E-01	1.76E-01		4.42E-01	
7.00E+04	3.15E-01				5.48E-02				2.44E-01	1.08E-01	3.43E-01	2.59E-01	4.77E-02	4.77E-02		2.46E-01	
1.00E+05	1.21E-01				7.50E-03				3.37E-02	7.37E-03	9.54E-02	3.85E-02	2.26E-04	2.26E-04		6.26E-02	
2.00E+05																	
3.00E+05																	
5.00E+05																	
7.00E+05																	
1.00E+06																	
2.00E+06																	
3.00E+06																	
5.00E+06																	
7.00E+06																	
1.00E+07																	
2.00E+07																	
3.00E+07																	
5.00E+07																	
7.00E+07																	
1.00E+08																	
2.00E+08																	
3.00E+08																	
5.00E+08																	
7.00E+08																	
1.00E+09																	
Mean	6.04E+04	2.60E+03	8.14E+03	3.37E+03	3.54E+04	5.50E+02	3.52E+02	1.64E+03	5.09E+04	3.97E+04	5.99E+04	5.06E+04	3.02E+04	3.03E+04	1.02E+03	5.03E+04	3.23E+03

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LEVEL 3 CONSEQUENCE ASSESSMENT USING FRAMATOME COMMERCIAL FUEL

FOR

BROWNS FERRY NUCLEAR (SAMA)

Revision 0

January 2002

Prepared by ABS Consulting

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LEVEL 3 CONSEQUENCE ASSESSMENT FOR BROWNS FERRY NUCLEAR (SAMA)

1.0 SUMMARY

A Level 3 consequence assessment update has been completed for Browns Ferry Nuclear (BFN) Units 2 and 3 using the most recent version of the MACCS computer code referred to as MACCS2 V1.12 (MELCOR Accident Consequence Code System).[1] The MACCS2 V1.12 code was developed by Sandia National Laboratories for the NRC (and DOE) and follows a methodology similar to that of its predecessor, the CRAC2[2] code used for the Level 3 analysis in the BFN PRA conducted in 1982. The original version of MACCS was used in the NUREG-1150 degraded core calculations [3]. Definition of source terms was based on the MAAP (Modular Accident Analysis Program)[4] code runs that were completed during the IPE assessment reported in 1992. The 1980 site tower weather data was used to represent weather conditions at the site. All other site data was updated and extrapolated as appropriate to be representative of the year 2036.

2.0 INTRODUCTION

In a probabilistic risk assessment of a nuclear power plant, the ultimate risk is expressed in terms of the health effects and economic impacts that a potential reactor accident would have on the surrounding population. For a particular nuclear plant site, the consequences depend on local meteorological conditions, population distribution, and nature of land usage as well as on the magnitude and characteristics of the radioactive release during the accident. This report describes the basic elements of the consequence analysis, site-specific information around Browns Ferry Nuclear Power Plant, and results of the consequence analysis. Because the results of this analysis are designed to be input into the SAMA economic model, the report focuses on the economic impacts rather than the health impacts.

Each of the major hypothetical accidents identified in the IPE Level 2 study [5] was assigned to one of several release categories based on the primary system and containment responses to the accident conditions calculated by the MAAP code [4]. Each release category has associated release fractions of the initial core radionuclide inventory, which are used as input data to the consequence analysis model.

Assuming that an accident can occur at any given time, there are various factors that would influence the accident consequences. One of the most important factors is the atmospheric dispersion, which is computed based on local meteorological conditions that exist at the time of accident. The meteorological data includes wind direction, wind speed, atmospheric stability (turbulence), and rainfall intensity. The atmospheric dispersion model used in this study is a standard Gaussian dispersion model that accounts for changes in wind speed and precipitation as a function of time after the accident. Along with the atmospheric dispersion model, the dry and wet deposition processes are modeled to determine the air contamination and ground contamination along the plume pathway. The potential radiation dose accumulation is computed from cloud shine, ground shine, inhalation of radioactive material, and ingestion of contaminated food and milk. Evacuation and sheltering of the population, as well as land and food interdiction, are used to mitigate early and latent health effects.

The results of the consequence analysis are presented in the form of complementary cumulative distribution functions (CCDFs). These distributions show the probabilities and magnitudes for various consequences such as early fatalities. The probabilities in a CCDF are presented as conditional probabilities. The conditional probability used in the context of this report is defined as the probability that a consequence of a certain magnitude will occur given that in-plant events leading to the particular ex-plant release under study has occurred. These CCDFs are utilized to generate the overall risk curves when the plant systems and containment failure probabilities are incorporated.

3.0 CONSEQUENCE ANALYSIS METHODOLOGY AND INPUT ASSUMPTIONS

The mathematical and statistical models used in MACCS2 V1.12 are briefly discussed below along with assumptions used to develop input data.

3.1 Released Radioactive Material

During the IPE Level 2 assessment, several MAAP runs were made to characterize potential releases. These release categories have associated probabilities of occurrence and magnitudes of radioactive material release for several groups of isotopes. Releases are given in terms of the fraction of the initial core radioactive inventory. Tennessee Valley Authority Nuclear (TVAN)[11] provided the initial reactor core fission product inventory. The available data set for the Framatome Commercial fuel and the other two fuel types contained data for more than 650 isotopes, although the set of isotopes included was not the same for each fuel type. MACCS2 allows a maximum of 150 isotopes. The group of isotopes included was determined by first eliminating the isotopes with no dose factors available in the MACCS2 825-isotope data file, then eliminating isotopes that were not available for all three fuel types, and finally eliminating the isotopes that had the lowest activity after 30 minutes of decay. The final list of 150 isotopes includes more than 99% of the total fission product activity. The list of the 150 isotopes used in the analysis and their inventories at 100% power level is shown in Table 1.

In addition to the release magnitude, the parameters that characterize the various releases due to hypothetical accident sequences are time of release, duration of release, warning time for evacuation, height of release, and energy content of the released radioactive plume.

The time of start of release was taken from MAAP runs and refers to the time interval between the start of the hypothetical accident and the release of radioactive material from the containment building to the atmosphere. This parameter is used to calculate the decay of radioactivity as well as timing used in computing dose accumulated by evacuees in relation to plume location and deposited material. The duration of release is the total time during which radioactive material is emitted into the atmosphere; it is used to account for continuous releases by adjusting for horizontal dispersion due to changes in wind direction.

For this analysis, 95% of the population was assumed to evacuate, and the remainder were assumed to remain in place. The analysis further assumed that people who had not evacuated would be relocated when the total effective dose commitment to an individual exceeded the threshold of .25 Sieverts. Finally, the height of release and the energy content of the released plume affect the manner in which the plume would be dispersed in the atmosphere. Because this information could not be determined from the MAAP release files, the release was conservatively assumed to be at ground level with no heat energy to give plume rise. Source

term assumptions are provided in Table 2 with the risk dominant release phase indicated in bold print.

TABLE 1. BFN UNITS 2 AND 3 INITIAL CORE INVENTORY (Framatome Commercial Fuel at 100% POWER)

Isotope Name	Core Inventory (Bq)	Isotope Name	Core Inventory (Bq)	Isotope Name	Core Inventory (Bq)	Isotope Name	Core Inventory (Bq)
Cr-51	1.888E+17	Nb-97m	6.688E+18	Te-127	3.279E+17	Ce-141	6.700E+18
Mn-54	1.419E+16	Mo-99	7.520E+18	Te-127m	5.541E+16	Ce-143	6.275E+18
Mn-56	4.014E+17	Mo-101	6.756E+18	Te-129	1.193E+18	Ce-144	5.654E+18
Fe-55	6.162E+16	Tc-99m	6.643E+18	Te-129m	2.408E+17	Pr-142	2.301E+17
Co-58	2.100E+16	Tc-101	6.756E+18	Te-131m	7.689E+17	Pr-143	6.078E+18
Co-60	1.015E+16	Tc-104	4.919E+18	Te-131	3.364E+18	Pr-144	5.682E+18
As-78	2.731E+16	Ru-103	6.106E+18	Te-132	5.710E+18	Pr-144m	7.915E+16
Ge-78	2.697E+16	Rh-103m	6.106E+18	Te-133	4.466E+18	Pr-145	4.268E+18
Se-81	2.041E+17	Ru-105	4.042E+18	Te-133m	3.703E+18	Pr-147	2.674E+18
Se-81m	1.453E+16	Rh-105	3.816E+18	Te-134	7.321E+18	Nd-147	2.694E+18
Se-83	2.326E+17	Ru-106	2.219E+18	I-128	3.505E+16	Nd-149	1.518E+18
Br-82	1.216E+16	Rh-106	2.386E+18	I-130	8.085E+16	Nd-151	7.661E+17
Br-83	4.947E+17	Rh-106m	7.434E+16	I-131	3.958E+18	Pm-147	9.470E+17
Br-84	9.215E+17	Rh-107	2.304E+18	I-132	5.795E+18	Pm-148	7.152E+17
Kr-83m	4.975E+17	Pd-109	1.326E+18	I-133	8.254E+18	Pm-148m	1.439E+17
Kr-85	5.286E+16	Ag-109m	1.326E+18	I-134	9.159E+18	Pm-149	2.295E+18
Kr-85m	1.035E+18	Ag-110m	1.264E+16	I-135	7.830E+18	Pm-150	1.778E+16
Kr-87	2.081E+18	Ag-111	2.202E+17	Xe-131m	5.286E+16	Pm-151	7.745E+17
Kr-88	2.883E+18	Ag-112	1.012E+17	Xe-133	7.915E+18	Sm-153	1.713E+18
Rb-86	6.926E+15	Cd-115	3.109E+16	Xe-133m	2.587E+17	Sm-155	1.382E+17
Rb-88	2.968E+18	Cd-117	3.081E+16	Xe-135	2.660E+18	Sm-156	8.593E+16
Rb-89	3.873E+18	In-113m	1.159E+16	Xe-135m	1.693E+18	Eu-154	3.219E+16
Sr-89	4.014E+18	In-115m	3.109E+16	Xe-138	7.067E+18	Eu-155	1.344E+16
Sr-90	4.636E+17	In-116m	1.984E+16	Cs-134	7.124E+17	Eu-156	7.841E+17
Sr-91	5.032E+18	In-117m	2.824E+16	Cs-134m	1.538E+17	Eu-157	8.028E+16
Sr-92	5.314E+18	In-117	2.304E+16	Cs-135m	1.306E+17	Eu-158	3.109E+16
Y-90	4.840E+17	Sn-113	1.156E+16	Cs-136	2.375E+17	Gd-159	6.690E+17
Y-91	5.174E+18	Sn-121	5.303E+16	Cs-137	6.021E+17	W-187	1.583E+16
Y-91m	2.912E+18	Sn-123m	3.280E+16	Cs-138	7.632E+18	Pu-238	1.275E+16
Y-92	5.371E+18	Sn-127	1.326E+17	Ba-137m	5.710E+17	Np-239	7.293E+19
Y-93	4.071E+18	Sn-128	5.512E+17	Ba-139	7.293E+18	Pu-239	1.764E+15
Y-94	6.417E+18	Sb-125	4.577E+16	Ba-140	7.321E+18	Pu-240	2.581E+15
Y-95	6.671E+18	Sb-131	3.138E+18	Ba-141	6.615E+18	Pu-241	6.304E+17
Zr-95	7.206E+18	Sn-125	1.970E+16	Ba-142	6.304E+18	Am-241	8.113E+14
Nb-95	7.228E+18	Sb-127	3.307E+17	La-140	7.802E+18	Cm-242	1.840E+17
Nb-95m	8.003E+16	Sb-129	1.258E+18	La-141	6.671E+18	Cm-244	7.717E+15
Zr-97	7.053E+18	Sb-130	4.184E+17	La-142	6.530E+18		
Nb-97	7.081E+18	Te-125m	9.996E+15	La-143	6.219E+18		

TABLE 2. SOURCE TERM ASSUMPTIONS

Release Phase	Release Time, s	Release Duration, s	Release Data for MACCS: Case ENMKCTT								
			Kr-Xe	I	Cs	Te-Sb	Sr	Ru	La	Ce	Ba
1	1275.1	7096.4	6.510E-1	6.294E-4	4.982E-4	5.092E-7	1.272E-6	1.322E-4	6.443E-8	2.859E-7	2.825E-5
2	8371.5	13233.4	3.434E-1	1.752E-1	1.850E-1	2.213E-2	7.608E-5	1.409E-2	1.845E-5	1.776E-4	1.595E-3
3	21604.9	43205.7	5.600E-3	2.600E-2	3.511E-2	8.616E-2	3.055E-3	0.000E0	2.872E-4	9.501E-4	1.244E-3
4	64810.6	64800.0	0.000E0	4.640E-2	4.249E-2	6.284E-2	4.790E-4	0.000E0	2.070E-5	1.760E-4	2.110E-4

Risk Dominant Plume 2

Warning Time (From Scram), s 600

Release Phase	Release Time, s	Release Duration, s	Release Data for MACCS: Case MIALF								
			Kr-Xe	I	Cs	Te-Sb	Sr	Ru	La	Ce	Ba
1	11220.4	10383.0	5.281E-1	2.620E-4	1.171E-3	2.198E-5	6.341E-7	3.541E-6	2.134E-8	4.627E-8	4.521E-6
2	21603.3	21601.8	1.531E-1	3.540E-5	1.578E-4	2.008E-6	5.540E-8	2.970E-7	9.00E-10	2.060E-9	4.500E-7
3	43205.1	43200.9	1.125E-1	1.340E-5	5.209E-5	5.375E-7	1.510E-8	9.400E-8	1.50E-10	2.60E-10	3.620E-7
4	86406.0	43194.2	2.100E-2	1.900E-6	6.643E-6	6.776E-8	2.000E-9	1.700E-8	1.00E-11	2.00E-11	5.350E-7

Risk Dominant Plume 1

Warning Time (From Scram), s 2627.7

Release Phase	Release Time, s	Release Duration, s	Release Data for MACCS: Case NIH								
			Kr-Xe	I	Cs	Te-Sb	Sr	Ru	La	Ce	Ba
1	34363.1	8854.8	1.642E-2	3.452E-4	3.256E-4	7.437E-5	1.235E-6	1.291E-5	1.330E-7	5.041E-7	3.099E-6
2	43217.8	21611.1	5.926E-1	4.736E-3	5.208E-3	1.530E-3	6.917E-5	8.600E-6	7.150E-6	2.855E-5	3.296E-5
3	64829.0	21606.0	1.638E-1	6.000E-6	2.088E-5	1.451E-4	2.040E-6	1.000E-8	1.760E-7	1.830E-6	9.400E-7
4	86435.0	43173.0	1.134E-1	1.540E-4	1.800E-4	9.559E-4	1.000E-8	1.900E-7	2.000E-9	2.000E-8	3.400E-7

Risk Dominant Plume 2

Warning Time (From Scram), s 600

Release Phase	Release Time, s	Release Duration, s	Release Data for MACCS: Case NIHNSP								
			Kr-Xe	I	Cs	Te-Sb	Sr	Ru	La	Ce	Ba
1	34363.1	8847.4	4.607E-2	1.493E-3	1.279E-3	1.600E-4	2.231E-6	1.827E-5	1.846E-7	6.979E-7	7.831E-6
2	43210.4	21615.2	7.743E-2	1.880E-4	2.140E-4	2.836E-4	1.771E-5	1.500E-7	1.918E-6	8.135E-6	7.449E-6
3	64825.7	21608.5	7.980E-2	1.300E-5	2.974E-5	1.978E-4	5.870E-6	2.000E-8	5.560E-7	4.027E-6	2.560E-6
4	86434.2	43184.0	1.028E-1	1.080E-4	1.285E-4	7.365E-4	5.900E-7	1.300E-7	5.600E-8	4.200E-7	4.500E-7

Risk Dominant Plume 1

Warning Time (From Scram), s 600

TABLE 2 (continued)

Release Phase	Release Time, s	Release Duration, s	Release Data for MACCS: Case OIA								
			Kr-Xe	I	Cs	Te-Sb	Sr	Ru	La	Ce	Ba
1	96989.5	11032.8	9.471E-1	1.840E-1	1.887E-1	4.224E-2	5.210E-7	3.356E-7	4.231E-8	3.792E-7	2.644E-6
2	108022.3	21580.0	1.000E-4	2.550E-2	2.876E-2	4.751E-3	7.650E-8	1.833E-6	1.120E-9	7.300E-9	1.930E-7

Risk Dominant Plume 1

Warning Time (From Scram), s 994.3

Release Phase	Release Time, s	Release Duration, s	Release Data for MACCS: Case OIALF								
			Kr-Xe	I	Cs	Te-Sb	Sr	Ru	La	Ce	Ba
1	18177.6	3433.0	5.743E-3	7.723E-5	5.483E-5	1.025E-5	1.231E-7	1.937E-6	1.825E-8	1.465E-7	3.114E-7
2	21610.6	21607.3	2.774E-1	3.387E-5	4.938E-5	3.484E-5	1.776E-6	1.680E-7	1.676E-7	7.975E-7	7.736E-7
3	43217.9	43211.0	4.665E-1	4.460E-5	6.050E-5	2.742E-4	4.220E-7	1.400E-7	3.960E-8	3.550E-7	2.560E-7
4	86428.9	43190.4	1.479E-1	5.600E-5	1.192E-4	5.478E-5	2.500E-8	3.000E-8	9.00E-10	1.100E-8	2.100E-8

Risk Dominant Plume 3

Warning Time (From Scram), s 994.3

Release Phase	Release Time, s	Release Duration, s	Release Data for MACCS: Case PID								
			Kr-Xe	I	Cs	Te-Sb	Sr	Ru	La	Ce	Ba
1	78449.2	7967.3	3.570E-2	2.054E-5	2.182E-5	2.054E-5	5.744E-7	9.485E-6	1.287E-7	3.629E-7	2.600E-6
2	86416.5	21603.6	4.388E-1	1.450E-4	1.583E-4	5.241E-4	1.461E-5	1.408E-5	1.646E-6	6.642E-6	1.046E-5
3	108020.2	21597.2	1.320E-1	5.000E-7	5.930E-7	9.167E-6	1.290E-6	0.000E0	1.110E-7	8.990E-7	5.100E-7

Risk Dominant Plume 2

Warning Time (From Scram), s 600

Release Phase	Release Time, s	Release Duration, s	Release Data for MACCS: Case PIDNSP								
			Kr-Xe	I	Cs	Te-Sb	Sr	Ru	La	Ce	Ba
1	62069.6	2761.5	5.438E-3	1.322E-5	1.679E-5	3.184E-5	8.986E-7	4.381E-6	1.664E-7	7.880E-7	1.186E-6
2	64831.0	21602.1	3.253E-1	1.188E-4	1.117E-4	3.531E-3	1.634E-4	3.364E-6	1.782E-5	5.887E-5	6.547E-5
3	86433.1	21600.0	2.342E-1	3.030E-5	3.988E-5	9.549E-4	9.140E-5	4.900E-7	8.020E-6	3.539E-5	3.554E-5
4	108033.1	21580.0	1.048E-1	5.100E-5	8.643E-5	6.164E-4	2.050E-5	5.000E-8	1.420E-6	1.015E-5	8.200E-6

Risk Dominant Plume 2

Warning Time (From Scram), s 600

TABLE 2 (continued)

Release Phase	Release Time, s	Release Duration, s	Release Data for MACCS: Case PIHDEP								
			Kr-Xe	I	Cs	Te-Sb	Sr	Ru	La	Ce	Ba
1	67127.5	19313.4	9.467E-1	5.450E-2	4.927E-2	1.401E-1	6.315E-4	3.389E-6	4.200E-5	4.658E-4	2.687E-4
2	86440.9	21600.0	2.000E-4	2.373E-2	1.979E-2	1.935E-2	7.900E-6	3.927E-6	7.400E-7	4.700E-6	1.430E-5
3	108040.9	21560.0	1.000E-4	5.867E-2	5.575E-2	5.173E-3	3.000E-7	6.464E-6	3.000E-8	1.000E-7	5.540E-5

Risk Dominant Plume 1

Warning Time (From Scram), s 14400

Release Phase	Release Time, s	Release Duration, s	Release Data for MACCS: Case PIHDEPV								
			Kr-Xe	I	Cs	Te-Sb	Sr	Ru	La	Ce	Ba
1	79000.6	7432.0	9.453E-1	9.975E-2	8.234E-2	7.246E-2	1.772E-5	1.308E-6	1.441E-6	1.168E-5	9.528E-6
2	86432.6	21600.0	3.000E-4	1.375E-2	1.078E-2	2.943E-2	8.150E-6	3.088E-6	7.960E-7	4.600E-6	4.732E-6
3	108032.6	21580.0	2.000E-4	1.070E-2	2.243E-2	1.097E-2	4.600E-7	5.330E-7	4.800E-8	2.100E-7	1.040E-6

Risk Dominant Plume 1

Warning Time (From Scram), s 14400

Release Phase	Release Time, s	Release Duration, s	Release Data for MACCS: Case PIHDHB								
			Kr-Xe	I	Cs	Te-Sb	Sr	Ru	La	Ce	Ba
1	51487.8	13336.3	9.467E-1	3.051E-2	5.478E-2	2.427E-1	3.589E-2	3.554E-5	8.160E-3	2.549E-2	1.476E-2
2	64824.1	21614.7	2.000E-4	3.989E-2	3.874E-2	3.242E-2	2.560E-3	4.600E-7	3.220E-4	2.700E-3	1.150E-3
3	86438.7	21600.0	1.000E-4	2.616E-2	2.326E-2	9.753E-2	1.000E-5	9.890E-6	0.000E0	1.000E-5	5.000E-5
4	108038.7	21580.0	1.000E-4	4.414E-2	5.573E-2	3.377E-3	0.000E0	6.040E-6	0.000E0	0.000E0	1.100E-4

Risk Dominant Plume 1

Warning Time (From Scram), s 14400

Release Phase	Release Time, s	Release Duration, s	Release Data for MACCS: Case PIHDLF								
			Kr-Xe	I	Cs	Te-Sb	Sr	Ru	La	Ce	Ba
1	44490.1	20328.0	9.401E-1	1.879E-1	2.258E-1	1.125E-1	1.089E-2	1.889E-3	1.534E-3	6.683E-3	4.993E-3
2	64818.1	21612.5	7.100E-3	9.400E-3	8.191E-3	2.543E-2	1.370E-3	4.000E-6	1.700E-4	1.512E-3	6.140E-4
3	86430.6	21601.9	4.000E-4	4.300E-3	9.694E-3	8.866E-2	2.000E-5	4.100E-5	2.000E-6	1.400E-5	3.500E-5
4	108032.5	21580.0	0.000E0	1.900E-3	7.852E-3	3.882E-2	0.000E0	5.000E-6	0.000E0	1.000E-6	9.000E-6

Risk Dominant Plume 1

Warning Time (From Scram), s 14400

TABLE 2 (continued)

Release Phase	Release Time, s	Release Duration, s	Release Data for MACCS: Case PIHDLV								
			Kr-Xe	I	Cs	Te-Sb	Sr	Ru	La	Ce	Ba
1	39529.3	3686.7	5.764E-1	7.857E-3	5.919E-3	1.374E-3	3.039E-5	9.805E-5	2.825E-6	7.652E-6	5.580E-5
2	43216.0	21607.1	3.391E-1	1.856E-2	1.835E-2	1.289E-2	9.796E-4	1.295E-5	1.170E-4	4.787E-4	4.314E-4
3	64823.1	21607.1	2.570E-2	1.500E-4	4.848E-4	3.437E-3	1.130E-4	2.400E-6	1.100E-5	1.091E-4	5.440E-5
4	86430.2	43185.1	4.900E-3	5.680E-3	9.298E-3	4.494E-2	3.000E-6	5.000E-7	4.000E-7	2.400E-6	1.800E-6

Risk Dominant Plume 2

Warning Time (From Scram), s 14400

Release Phase	Release Time, s	Release Duration, s	Release Data for MACCS: Case PIHNDP								
			Kr-Xe	I	Cs	Te-Sb	Sr	Ru	La	Ce	Ba
1	37392.5	5834.7	5.764E-1	7.857E-3	5.919E-3	1.374E-3	3.039E-5	9.805E-5	2.825E-6	7.652E-6	5.580E-5
2	43227.3	21612.2	3.391E-1	1.856E-2	1.835E-2	1.289E-2	9.796E-4	1.295E-5	1.170E-4	4.787E-4	4.314E-4
3	64839.4	21614.0	2.570E-2	1.500E-4	4.848E-4	3.437E-3	1.130E-4	2.400E-6	1.100E-5	1.091E-4	5.440E-5
4	86453.4	43160.0	4.900E-3	5.680E-3	9.298E-3	4.494E-2	3.000E-6	5.000E-7	4.000E-7	2.400E-6	1.800E-6

Risk Dominant Plume 2

Warning Time (From Scram), s 14400

Release Phase	Release Time, s	Release Duration, s	Release Data for MACCS: Case PJH								
			Kr-Xe	I	Cs	Te-Sb	Sr	Ru	La	Ce	Ba
1	5703.7	15915.4	1.156E-1	7.126E-5	6.364E-5	1.618E-5	9.112E-7	4.807E-7	1.005E-7	3.361E-7	5.531E-7
2	21619.1	21607.3	2.551E-1	1.384E-5	1.324E-5	9.952E-6	3.228E-7	1.800E-9	3.490E-8	1.994E-7	1.465E-7
3	43226.4	43213.6	2.621E-1	2.130E-5	2.961E-5	9.661E-5	5.700E-8	2.700E-9	5.400E-9	2.920E-8	2.610E-8
4	86440.0	43178.1	9.590E-2	3.996E-4	4.806E-4	2.555E-4	1.900E-8	2.00E-10	1.100E-9	8.300E-9	1.090E-8

Risk Dominant Plume 1

Warning Time (From Scram), s 600

Release Phase	Release Time, s	Release Duration, s	Release Data for MACCS: Case PJHNSP								
			Kr-Xe	I	Cs	Te-Sb	Sr	Ru	La	Ce	Ba
1	1303.2	3625.2	3.264E-2	6.979E-3	6.979E-3	2.816E-4	3.603E-6	1.216E-5	4.365E-8	7.230E-8	2.945E-5
2	4928.4	16680.1	5.030E-1	1.760E-1	1.754E-1	1.526E-2	4.186E-4	9.610E-4	3.977E-5	1.188E-4	8.570E-4
3	21608.6	43200.0	2.862E-1	1.240E-2	1.417E-2	1.969E-2	3.258E-4	4.380E-5	3.546E-5	1.535E-4	1.706E-4
4	64808.6	64800.0	5.670E-2	7.200E-3	9.990E-3	7.074E-2	6.700E-6	5.000E-6	6.600E-7	4.100E-6	4.000E-6

Risk Dominant Plume 2

Warning Time (From Scram), s 600

TABLE 2 (continued)

Release Phase	Release Time, s	Release Duration, s	Release Data for MACCS: Case PLF								
			Kr-Xe	I	Cs	Te-Sb	Sr	Ru	La	Ce	Ba
1	34389.1	8841.	5.468E-2	1.346E-4	1.503E-4	1.546E-5	5.850E-7	6.285E-6	8.312E-8	5.875E-7	1.723E-6
2	43230.7	21618.	5.662E-1	4.596E-4	7.236E-4	4.222E-3	1.564E-4	1.174E-5	1.469E-5	6.020E-5	6.580E-5
3	64848.9	21619.	1.421E-1	1.780E-5	4.552E-5	1.088E-4	1.200E-6	1.000E-8	1.000E-7	1.110E-6	7.600E-7
4	86468.3	43145.	1.187E-1	2.610E-4	2.800E-4	9.108E-4	0.000E0	1.040E-6	0.000E0	1.000E-8	6.000E-7

Risk Dominant Plume 2

Warning Time (From Scram), s 14251.5

3.2 Meteorological Data Sampling Method

The atmospheric dispersion of radioactive material from a postulated accident depends on the meteorological conditions that exist from the start of the accident through a period of tens to hundreds of hours following the accident. Since the weather that could occur coincident with the accident is diverse, representative meteorological data sequences are selected as input to the dispersion model to reflect the dependence of the transport and dispersion process on the site weather. The selection process is done by means of sampling techniques from a full year of hourly weather data taken from the BFN on-site meteorological tower. For this analysis, the technique referred to as weather bin sampling in the MACCS2 V1.12 code was used for the 1980 year of data.

This sampling method ensures a complete coverage of diurnal, seasonal, and 4-day cycles without the statistical noise of methods that utilize random sampling and includes the "rain tails" (ground shine dose from deposition due to delayed rain).

The meteorological data assessment is done by sorting the weather sequence into categories that provide a realistic representation of the year's weather without overlooking weather conditions that are instrumental in producing major consequences. A set of 40 weather categories has been selected for the MACCS2 V1.12 model to reflect these requirements. Up to eight meteorological scenarios are selected for each category, limited by the number of meteorological scenarios available for that category.

Given a postulated large accident, large numbers of early fatalities and injuries are normally associated with relatively low probability weather events such as rainfall or wind speed slowdowns within 50 miles of the plant site or with stable weather and moderate wind speeds at the start of the release. In MACCS2 V1.12 these weather data types have been selected to be among the 40 categories utilized in the assessment process.

The 40 categories are described in Table 3 where the frequency of occurrence of weather for each category is given. The weather data represent one year of meteorological data for the Browns Ferry Nuclear Plant site. The entire year of data, 8760 hourly recordings, are sorted into the 40 weather categories. Each sequence is examined to determine (1) the first occurrence of rain within 50 miles of the site, or (2) the stability category and wind speed at the start of the sequence. The first of these conditions that is satisfied by the sequence determines the weather category to which it is assigned. Following the assessment process, the start hour of each weather sequence will have been assigned to one and only one weather category. Each of the weather categories then includes a set of weather sequences representing the corresponding weather type. The probability of occurrence of that weather type is the ratio of the number of weather sequences in the category to the total number of sequences in the year's weather data set.

With this information, weather sequences can be sampled to reflect the weather data for the full year. This ensures representation of each type of weather sequence, those important to realistic representation of the weather data set, and those important to the occurrence of the most serious accident consequences due to rainout in high population areas.

TABLE 3. WEATHER DATA CATEGORIES

	METBIN		WIND DIRECTION 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	TOTAL	PER CENT
1	B[1]	3[2]	0.181	0.078	0.054	0.102	0.018	0.018	0.000	0.003	0.006	0.021	0.009	0.000	0.000	0.003	0.316	0.190	332	3.7900
2	B	4	0.027	0.008	0.011	0.084	0.076	0.103	0.163	0.053	0.183	0.167	0.068	0.000	0.000	0.000	0.038	0.019	263	3.0023
3	D	1	0.179	0.051	0.038	0.051	0.038	0.051	0.026	0.038	0.038	0.051	0.064	0.077	0.038	0.013	0.115	0.128	78	0.8904
4	D	2	0.151	0.076	0.065	0.096	0.037	0.039	0.019	0.015	0.034	0.030	0.025	0.029	0.032	0.027	0.154	0.171	801	9.1438
5	D	3	0.073	0.041	0.036	0.112	0.080	0.083	0.057	0.052	0.083	0.108	0.087	0.024	0.024	0.014	0.077	0.050	714	8.1507
6	D	4	0.031	0.006	0.006	0.077	0.066	0.103	0.096	0.100	0.182	0.193	0.093	0.009	0.000	0.001	0.032	0.006	809	9.2352
7	D	5	0.005	0.008	0.008	0.042	0.037	0.164	0.138	0.175	0.233	0.151	0.024	0.000	0.000	0.000	0.011	0.003	377	4.3037
8	D	6	0.000	0.012	0.000	0.000	0.047	0.188	0.271	0.282	0.141	0.047	0.012	0.000	0.000	0.000	0.000	0.000	85	0.9703
9	E	1	0.144	0.088	0.043	0.045	0.050	0.015	0.020	0.028	0.038	0.063	0.053	0.055	0.045	0.048	0.128	0.136	397	4.5320
10	E	2	0.124	0.065	0.013	0.121	0.099	0.013	0.016	0.037	0.042	0.059	0.047	0.039	0.058	0.042	0.148	0.076	815	9.3037
11	E	3	0.090	0.029	0.008	0.065	0.149	0.029	0.037	0.065	0.106	0.106	0.039	0.020	0.014	0.041	0.141	0.061	490	5.5936
12	E	4	0.071	0.009	0.003	0.021	0.047	0.041	0.079	0.159	0.144	0.232	0.050	0.006	0.003	0.009	0.085	0.041	340	3.8813
13	F	1	0.058	0.041	0.022	0.017	0.009	0.019	0.026	0.073	0.147	0.119	0.088	0.065	0.043	0.039	0.153	0.082	464	5.2968
14	F	2	0.044	0.010	0.011	0.028	0.044	0.016	0.016	0.047	0.092	0.151	0.056	0.078	0.176	0.061	0.094	0.075	816	9.3151
15	F	3	0.041	0.007	0.004	0.011	0.037	0.011	0.011	0.097	0.146	0.261	0.075	0.082	0.049	0.007	0.067	0.093	268	3.0594
16	F	4	0.150	0.013	0.000	0.000	0.000	0.025	0.038	0.163	0.150	0.237	0.050	0.038	0.000	0.000	0.050	0.087	80	0.9132
17	R1[3]	3[4]	0.079	0.013	0.008	0.024	0.029	0.034	0.024	0.061	0.069	0.069	0.045	0.082	0.140	0.103	0.132	0.087	378	4.3151
18	R1	8	0.162	0.014	0.000	0.014	0.014	0.014	0.000	0.068	0.027	0.014	0.027	0.068	0.162	0.149	0.135	0.135	74	0.8447
19	R1	16	0.143	0.032	0.008	0.032	0.056	0.024	0.024	0.048	0.056	0.032	0.040	0.063	0.095	0.087	0.119	0.143	126	1.4384
20	R1	32	0.100	0.028	0.005	0.043	0.033	0.019	0.038	0.033	0.038	0.038	0.047	0.066	0.100	0.090	0.161	0.161	211	2.4087
21	R1	48	0.100	0.027	0.000	0.053	0.033	0.020	0.007	0.040	0.053	0.080	0.047	0.067	0.053	0.060	0.180	0.180	150	1.7123
22	R1	80	0.098	0.016	0.019	0.048	0.019	0.035	0.003	0.048	0.044	0.067	0.086	0.057	0.035	0.051	0.210	0.165	315	3.5959
23	R2	3	0.051	0.020	0.000	0.000	0.010	0.020	0.020	0.071	0.041	0.061	0.102	0.071	0.143	0.112	0.163	0.112	98	1.1187
24	R2	8	0.000	0.000	0.000	1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1	0.0114
25	R2	16	0.200	0.100	0.000	0.000	0.000	0.100	0.000	0.100	0.000	0.000	0.100	0.000	0.000	0.100	0.200	0.100	10	0.1142
26	R2	32	0.385	0.000	0.000	0.000	0.000	0.231	0.077	0.000	0.000	0.077	0.077	0.000	0.000	0.000	0.154	0.000	13	0.1484
27	R2	48	0.300	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.200	0.200	0.000	0.000	0.200	0.100	10	0.1142
28	R2	80	0.217	0.087	0.000	0.000	0.000	0.000	0.000	0.000	0.043	0.043	0.130	0.000	0.043	0.043	0.174	0.217	23	0.2626
29	R3	3	0.132	0.000	0.000	0.000	0.000	0.026	0.000	0.026	0.026	0.079	0.105	0.079	0.053	0.079	0.184	0.211	38	0.4338
30	R3	8	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.000	0.000	1	0.0114
31	R3	16	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.000	1	0.0114
32	R3	32	0.000	0.000	0.000	0.000	0.000	0.333	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.333	0.333	3	0.0342
33	R3	48	0.000	0.000	0.000	0.000	0.000	1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1	0.0114
34	R3	80	0.000	0.000	0.000	0.000	0.000	0.333	0.667	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3	0.0342
35	R4	3	0.059	0.059	0.020	0.039	0.000	0.000	0.059	0.039	0.137	0.039	0.059	0.059	0.137	0.059	0.196	0.039	51	0.5822
36	R4	8	0.000	0.000	0.000	0.100	0.000	0.000	0.000	0.000	0.100	0.200	0.000	0.100	0.100	0.000	0.300	0.100	10	0.1142
37	R4	16	0.105	0.105	0.000	0.000	0.053	0.000	0.000	0.000	0.105	0.053	0.000	0.000	0.105	0.105	0.263	0.105	19	0.2169
38	R4	32	0.000	0.000	0.032	0.097	0.000	0.065	0.032	0.000	0.097	0.065	0.065	0.000	0.129	0.065	0.194	0.161	31	0.3539
39	R4	48	0.050	0.000	0.000	0.050	0.100	0.100	0.000	0.000	0.050	0.050	0.100	0.050	0.100	0.000	0.250	0.100	20	0.2283
40	R4	80	0.091	0.091	0.023	0.091	0.045	0.023	0.000	0.023	0.068	0.023	0.045	0.000	0.000	0.000	0.295	0.182	44	0.5023
41	ALL		0.086	0.035	0.020	0.062	0.054	0.047	0.044	0.063	0.093	0.107	0.057	0.039	0.051	0.035	0.120	0.088	8760	

* * * * METEOROLOGICAL BIN SUMMARY * * * *

BIN PRIORITIES

S V - INITIAL WEATHER CONDITIONS WITH STABILITY CLASS S AND WIND SPEED INTERVAL V

(1) STABILITY CLASSES ARE B = A/B, D = C/D, E = E, AND F = F

(2) WIND SPEED INTERVALS ARE IN METERS PER SECOND, 1 (0-1), 2 (1-2), 3 (2-3), 4 (3-5), 5 (5-7), 6 (GT 7)

RI XX - RAIN INTENSITY I WITHIN THE INTERVAL ENDING AT XX

(3) INTERVAL ENDPOINTS ARE IN KILOMETERS FROM THE ACCIDENT SITE, THE 6 INTERVAL ENDPOINTS ARE 3 8 16 32 48 80 (km)

(4) RAIN INTENSITIES ARE IN MILLIMETERS OF RAIN PER HOUR, THE 3 INTENSITY BREAKPOINTS ARE 2.0 4.0 6.0 (mm/hr)

3.3 Population Distribution and Land Use

Population estimates for the year 2036 within 50 miles of the BFN plant were provided by TVAN [12] and are shown in Table 4. The chronic dose calculation covered a 50-mile radius. Habitable land fraction was estimated from regional maps in each of the 16 polar grid segments and is shown in Table 5.

3.4 Atmospheric Transport and Dispersion

The dispersion model implemented in MACCS2 V1.12 is described in detail in NUREG/CR-4691, Volume 2[13]. It is a Gaussian, time-dependent, plume segment model that has been in use for consequence assessments since the Reactor Safety Study (RSS)[7] in 1975. The plume is assumed to be transported in a straight line downwind in accordance with the measured wind direction. A surface roughness of 10 cm was used for the BFN site.

For each start hour selected by the meteorological sampling technique, the MAACS2 V1.12 dispersion model uses the subsequent meteorological conditions to predict the dispersion and transport of the released plume of radioactive material. The sequence of hourly recordings is used to account for changing meteorological conditions (i.e., wind speed, atmospheric thermal stability, and rain intensity may change during plume passage). The wind direction; however, is assumed to be invariant during and following the release.

Based on the wind speed in each hour, the stability, wind speed, and accumulated rainfall are assigned to all spatial intervals through which the plume passes during the hour. If the wind speed for an hour is not sufficient for the plume to fully traverse an interval, the wind speed, stability, and accumulated precipitation are averaged for all hours the plume is within that interval.

In MACCS2 V1.12, the effects of release duration, mixing layer depth, building wake, plume rise due to sensible heat buoyancy, and dry and wet removal processes are included. The ground concentration is calculated from the air concentration and the deposition rate. The radioactive material deposited on the ground is subtracted from the airborne radioactive material.

3.5 Radiation Exposure Pathways and Dosimetry

The calculation of radiation exposure in MACCS2 V1.12 is divided into two categories: early exposure that occurs during and shortly after radioactive plume passage, and chronic exposure that occurs over a longer time period. These two categories of exposure are discussed separately. The MACCS2 825-isotope data file was used to obtain dose factors for the calculation.

3.5.1 Early Exposure

The calculation of radiation doses due to early exposure considers the pathways: cloud shine, ground shine and inhalation.

TABLE 4. POPULATION DATA (estimated for 2036)

Sector	Distance Range, miles										
	0-1	1-2	2-3	3-4	4-5	5-10	10-20	20-30	30-40	40-50	Total
N	2	18	203	379	501	2,501	2,710	6,269	19,130	8,662	40,375
NNE	0	5	33	379	521	1,931	10,929	3,393	3,965	5,432	26,588
NE	2	10	65	114	278	8,350	21,034	23,783	16,920	17,488	88,044
ENE	6	82	365	289	432	2,273	35,534	69,528	63,014	10,840	182,363
E	11	54	25	13	53	5,170	5,731	136,377	105,268	12,263	264,965
ESE	5	9	208	0	0	86	1,096	4,229	20,885	17,799	44,317
SE	2	0	0	0	2	7,626	40,473	12,373	11,248	36,295	108,019
SSE	0	0	1	0	1	16,037	28,541	26,702	36,087	42,023	149,392
S	0	3	29	59	25	1,768	7,038	4,083	8,813	15,505	37,323
SSW	0	2	12	235	343	3,708	12,873	1,467	2,417	6,519	27,576
SW	0	0	3	90	381	1,523	6,376	3,318	4,075	19,955	35,721
WSW	0	0	70	122	79	168	3,957	3,895	29,617	4,376	42,284
W	0	55	200	15	3	69	3,855	17,460	37,892	4,842	64,391
WNW	0	0	1	4	2	85	3,124	28,974	51,789	11,954	95,933
NW	0	2	8	4	33	640	11,805	9,717	6,912	4,615	33,736
NNW	52	467	272	84	104	3,104	3,232	3,110	24,997	16,467	51,889
Total	80	707	1,495	1,787	2,758	55,039	198,308	354,678	443,029	235,035	1,292,916

TABLE 5. HABITABLE LAND FRACTION										
	Distance Interval, miles									
Sector	0-1	1-2	2-3	3-4	4-5	5-10	10-20	20-30	30-40	40-50
N	1.00	1.00	1.00	1.00	1.00	0.80	0.90	1.00	1.00	1.00
NNE	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
NE	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
ENE	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
E	1.00	1.00	1.00	0.80	0.90	0.90	1.00	0.90	1.00	1.00
ESE	0.90	0.70	0.80	0.10	0.10	0.20	0.60	0.90	0.90	0.90
SE	0.00	0.20	0.00	0.00	0.30	0.50	0.60	1.00	1.00	1.00
SSE	0.00	0.00	0.00	0.00	0.30	1.00	1.00	1.00	1.00	0.90
S	0.00	0.10	0.20	0.60	1.00	1.00	1.00	1.00	0.90	0.70
SSW	0.00	0.20	0.80	0.90	1.00	1.00	1.00	1.00	0.90	0.90
SW	0.00	0.80	0.90	0.95	1.00	1.00	1.00	1.00	1.00	1.00
WSW	0.00	0.70	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
W	0.00	0.80	0.90	1.00	1.00	0.90	1.00	1.00	0.90	0.90
WNW	0.00	0.00	0.20	0.70	0.80	0.40	0.60	0.60	0.90	1.00
NW	0.00	0.00	0.10	0.20	0.30	0.50	1.00	1.00	1.00	1.00
NNW	0.50	0.30	0.30	1.00	1.00	0.80	1.00	1.00	1.00	1.00

Conversion factors for early health effects are not available for several of the isotopes used in this analysis, therefore early doses and health effects were not calculated.

3.5.2 Chronic Exposure

The calculation of doses due to chronic exposure considers four pathways including long-term ground shine, inhalation of resuspended radionuclides, ingestion of radionuclides from directly contaminated crops, and ingestion of radionuclides via root uptake. This model has been considerably upgraded from the CRAC2 [(2)] model and is based on the COMIDA2 dynamic food chain model [(8)].

The interdiction and decontamination model used with the COMIDA2 food ingestion model was designed to be as close as possible to the original WASH-1400 model as currently implemented in MACCS2. Based on assumptions in NUREG-1150, the limiting value for the Effective Dose Equivalent (EDE) is 0.025 sv (2.5 rem) and the limiting value for the thyroid dose is 0.075 sv (7.5 rem).

Before calculating doses to an individual, the model first determines whether protective actions should be taken, such as land decontamination or prohibiting land use (land interdiction). When calculating population doses in a given area, the model assumes a constant population with respect to time.

Land fractions were given in the Browns Ferry PRA Chapter 9 in Table 9.3-7[(13)] out to 50 miles. Regional maps were inspected and the data were filled in for the grid distances that were not provided on the table. Region indexes and watershed indexes were also estimated by using

regional maps. Crop season and share were taken from Browns Ferry PRA Chapter 9 Table 9.3-8[14].

When better information was not available, the MACCS2 sample problem input was revised using generic economic data that applied to the entire region. Data for several parameters were taken from the BFN-PRA Chapter 9 [14], including per diem living expenses for relocated persons, the cost of farm and non-farm decontamination, the fraction of land devoted to farming and dairy production. The Statistical Abstracts of the United States [6] were used to obtain values for the value of farm and non-farm wealth. Economic data was extrapolated to the year 2016 using two inflation rates for the future, 3% and 7%.

3.6 Evacuation and Other Protective Measures

Evacuation and other protective measures (i.e., sheltering and relocation) are taken to avoid or reduce immediate exposure to the passing radioactive plume and ground contamination. Evacuation is potentially the most effective method of avoiding radiation exposure and can provide essentially total protection if completed prior to arrival of the plume. The assumptions used for evacuation and sheltering are provided in Table 6.

It was assumed that 95% of the people within 10 miles of the plant would evacuate starting two hours after the alarm. All of these people would continue to evacuate until they reached a distance of 20 miles from the plant. The remaining 5% of the people would stay and go about their normal activities. Because they would spend a significant fraction of that time indoors, the shielding factors are higher for these people, although the exposure levels to the plume are higher. The shielding inherent in normally inhabited structures offers some degree of protection against external penetrating radiation from airborne and ground-deposited radionuclides. Furthermore, the exclusion of a significant amount of airborne radioactive material from the interior of a structure, either by natural effects or by certain ventilation strategies, can reduce the amount of inhaled radionuclides as well. The shielding provided by a structure against external penetrating radiation from airborne or surface deposited radionuclides is expressed in terms of a shielding factor which is the ratio of the dose received inside the structure to the dose that would be received outside the structure.

TABLE 6. ASSUMED PROTECTIVE MEASURES

Shielding And Exposure Factors,

Three Values Of Each Protection Factor Are Supplied, One For Each Type Of Activity:
Activity Type:
1 - Evacuees While Moving
2 - Normal Activity In Sheltering And Evacuation Zone
3 - Sheltered Activity

Cloud Shielding Factor

Evacuees	Normal	Shelter
1.	0.75	0.5

Breathing Rate (Cubic Meters Per Second)

2.66E-4	2.66E-4	2.66E-4

Skin Protection Factor

1.0	0.41	0.33

Ground Shielding Factor

0.5	0.33	0.08

Resuspension Inhalation Model Concentration Coefficient (/Meter)
1.E-4
Resuspension Concentration Coefficient Half-Life (Sec)
1.82e5 (2.11 Days)
Last Ring In The Movement Zone = 7 (Evacuees Disappear After Traveling To 20 Miles)
Radial Evacuation Speed (M/S) = .234
Number Of Rings In Shelter And Evacuation Zone = 6
Delay Time To Take Shelter = 7200.
Delay Time To Begin Evacuation = 0.

Shelter And Relocation Zone Data
Duration Of The Emergency Phase (Seconds From Plume Arrival) = 604800. (One Week)
Critical Organ For Relocation Decisions = 'L-Edewbody'
Hot Spot Relocation Time (Seconds From Plume Arrival) 43200. (One-Half Day)
Normal Relocation Time (Seconds From Plume Arrival) 86400. (One Day)
Hot Spot Relocation Dose Criterion Threshold (Sieverts) 0.5 (50 Rem Dose To Whole Body In 1 Week Triggers Relocation)
Normal Relocation Dose Criterion Threshold (Sieverts) 0.25 (25 Rem Dose To Whole Body In 1 Week Triggers Relocation)

4.0 RESULTS

4.1 Health Effects Due To Radiation Doses

The MACCS2 V1.12 code determines the health effects which might occur due to the radiation doses from radioactivity released into the environment during a nuclear reactor accident. Two general categories of health effects are considered; early health effects and latent health effects. Early health effects were not calculated in this analysis. Latent health effects, which might show up at least one year after the radiation doses, include latent cancer fatalities, thyroid effects, and genetic effects. Latent health effects are calculated for the radiation doses received from early exposure and chronic exposure. The health effects models used in MACCS2 V1.12 have changed considerably from the CRAC2 health effects. The revised cancer risk model is now based on BIER V[9].

Latent health effects, expressed as latent cancer fatalities, are calculated for both early exposure and chronic exposure. Latent cancer and total population dose CCDFs for the area within 50 miles from the plant were computed in this study and are provided in Table 7.

4.2 Economic Impact

The economic impact model in MACCS2 V1.12 estimates the direct costs of measures taken to mitigate the public health effects of a reactor accident. The model costs are in 2016 dollars, and the model was run with the two sets of assumptions of the inflation rate after the year 2000; 3% and 7%. The model estimates the cost of evacuation, milk, and crop disposal, decontamination, and land use prohibition (interdiction) that may be required after an accident. CCDFs for the cost impacts associated with accident mitigation within 50 miles from the plant are provided in Table 7, as are the CCDFs for the areas and populations impacted.

The economic models of consequence analysis require several cost elements. Thus, for example, the cost of evacuating a person is assigned a given value, and the total cost of evacuation is merely that figure multiplied by the number of people evacuated. The quantity of each agricultural product condemned is calculated and multiplied by the value of a unit quantity of that product. The economic model is a simple counting and adding routine in which the key factors are the unit costs of each counter-measure.

Hence, the economic model essentially adds the costs incurred for evacuation, relocation, the interdiction of land use, and the destruction of crops. Note that it does not consider the cost of health effects (this would involve assigning a monetary value to life, which would be extremely controversial). It does not consider any economic multiplier effects (e.g., the affect on employment in one area if a factory in another has to close). There is no attempt to incorporate plant costs, although in the prediction of economic risk the contribution of the in-plant property damage far exceeds that of the offsite property damage. As demonstrated by the accident at Three Mile Island, the costs of decontaminating and reconstructing the plant and of replacing power may be several billion dollars even though the offsite consequences may be very small indeed.

TABLE 7. CCDFs FOR POPULATION DOSE, CHRONIC CANCER FATALITIES, AND ECONOMIC IMPACT

Cancer Fatalities	Probability of Exceedence, Latent Cancer Fatalities																
	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+00	1.00E+00	6.92E-01	9.67E-01	7.78E-01	1.00E+00	9.42E-02	4.92E-02	2.13E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	3.37E-01	1.00E+00	7.72E-01
2.00E+00	1.00E+00	2.43E-01	7.32E-01	3.05E-01	1.00E+00	4.12E-04	2.00E-04	1.99E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.04E-01	1.00E+00	3.05E-01
3.00E+00	1.00E+00	1.50E-01	4.50E-01	1.58E-01	9.98E-01			3.20E-05	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.97E-01	9.97E-01	2.46E-02	1.00E+00	1.31E-01
5.00E+00	1.00E+00	4.65E-02	2.08E-01	5.72E-02	9.43E-01				9.96E-01	9.83E-01	1.00E+00	1.00E+00	9.24E-01	9.26E-01	7.42E-04	1.00E+00	3.04E-02
7.00E+00	1.00E+00	8.31E-03	1.27E-01	1.22E-02	8.32E-01				9.60E-01	8.90E-01	1.00E+00	9.99E-01	7.51E-01	7.58E-01		9.96E-01	4.34E-03
1.00E+01	9.90E-01	2.07E-03	5.31E-02	2.02E-03	5.74E-01				7.99E-01	6.34E-01	9.93E-01	9.69E-01	5.06E-01	5.06E-01		9.58E-01	2.00E-04
2.00E+01	6.57E-01		3.01E-06		2.06E-01				3.40E-01	2.24E-01	7.57E-01	5.48E-01	1.05E-01	1.06E-01		5.13E-01	
3.00E+01	3.58E-01				8.12E-02				1.21E-01	5.50E-02	4.52E-01	2.60E-01	5.50E-03	5.59E-03		2.31E-01	
5.00E+01	6.53E-02				3.36E-03				1.62E-03	5.11E-04	1.45E-01	5.11E-02				2.94E-02	
7.00E+01	1.05E-03										5.35E-02	1.85E-03					
1.00E+02											4.48E-03						
2.00E+02																	
3.00E+02																	
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5.00E+05																	
7.00E+05																	
1.00E+06																	
Mean	2.76E+01	1.79E+00	3.77E+00	1.95E+00	1.43E+01	5.80E-01	3.47E-01	7.36E-01	1.79E+01	1.47E+01	3.30E+01	2.46E+01	1.16E+01	1.16E+01	1.02E+00	2.30E+01	1.83E+00

TABLE 7 (continued)

Population	Probability of Exceedence, Effective Whole Body Population Dose from 0-50 mi, person-rem																
Dose	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+03	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00
2.00E+03	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00
3.00E+03	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00
5.00E+03	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.99E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00
7.00E+03	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.97E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00
1.00E+04	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.93E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00
2.00E+04	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.36E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00
3.00E+04	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.97E-01	8.21E-01	9.99E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00
5.00E+04	1.00E+00	9.98E-01	1.00E+00	9.99E-01	1.00E+00	9.38E-01	5.26E-01	9.81E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.91E-01	1.00E+00	1.00E+00
7.00E+04	1.00E+00	9.89E-01	1.00E+00	9.95E-01	1.00E+00	7.79E-01	3.15E-01	8.83E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.53E-01	1.00E+00	9.97E-01
1.00E+05	1.00E+00	9.65E-01	9.97E-01	9.81E-01	1.00E+00	5.05E-01	1.73E-01	6.06E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	8.10E-01	1.00E+00	9.86E-01
2.00E+05	1.00E+00	6.92E-01	9.67E-01	7.78E-01	1.00E+00	9.42E-02	4.92E-02	2.13E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	3.37E-01	1.00E+00	7.72E-01
3.00E+05	1.00E+00	4.02E-01	8.87E-01	4.81E-01	1.00E+00	1.26E-02	6.23E-03	7.77E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.93E-01	1.00E+00	4.78E-01
5.00E+05	1.00E+00	1.86E-01	5.66E-01	2.13E-01	1.00E+00			2.76E-03	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.99E-01	9.99E-01	5.19E-02	1.00E+00	2.05E-01
7.00E+05	1.00E+00	1.18E-01	3.56E-01	1.21E-01	9.93E-01			8.65E-06	1.00E+00	9.99E-01	1.00E+00	1.00E+00	9.87E-01	9.86E-01	7.96E-03	1.00E+00	9.12E-02
1.00E+06	1.00E+00	4.65E-02	2.08E-01	5.72E-02	9.43E-01				9.96E-01	9.83E-01	1.00E+00	1.00E+00	9.24E-01	9.26E-01	7.42E-04	1.00E+00	3.04E-02
2.00E+06	9.90E-01	2.07E-03	5.31E-02	2.02E-03	5.74E-01				7.99E-01	6.34E-01	9.93E-01	9.69E-01	5.06E-01	5.06E-01		9.58E-01	2.00E-04
3.00E+06	8.87E-01	3.01E-06	6.17E-03	3.01E-06	3.35E-01				5.24E-01	3.80E-01	9.31E-01	7.91E-01	2.53E-01	2.53E-01		7.32E-01	
5.00E+06	4.88E-01				1.19E-01				2.12E-01	1.10E-01	5.88E-01	3.92E-01	3.53E-02	3.59E-02		3.44E-01	
7.00E+06	2.65E-01				5.19E-02				5.65E-02	2.86E-02	3.45E-01	1.70E-01	3.71E-04	3.71E-04		1.42E-01	
1.00E+07	6.53E-02				3.36E-03				1.62E-03	5.11E-04	1.45E-01	5.11E-02				2.94E-02	
2.00E+07											4.48E-03						
3.00E+07																	
5.00E+07																	
7.00E+07																	
1.00E+08																	
2.00E+08																	
3.00E+08																	
5.00E+08																	
7.00E+08																	
1.00E+09																	
Mean	5.53E+06	3.57E+05	7.55E+05	3.90E+05	2.86E+06	1.16E+05	6.94E+04	1.47E+05	3.58E+06	2.94E+06	6.60E+06	4.92E+06	2.32E+06	2.33E+06	2.04E+05	4.59E+06	3.66E+05

TABLE 7 (continued)

Economic Cost ($)	Probability of Exceedence, Total Economic Cost (2016 Dollars, Assuming 3% Inflation Rate)																
	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+06	1.00E+00	9.95E-01	1.00E+00	9.99E-01	1.00E+00	9.52E-01	8.25E-01	9.82E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.78E-01	1.00E+00	9.97E-01
2.00E+06	1.00E+00	9.91E-01	1.00E+00	9.99E-01	1.00E+00	9.21E-01	7.69E-01	9.76E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.48E-01	1.00E+00	9.96E-01
3.00E+06	1.00E+00	9.87E-01	1.00E+00	9.97E-01	1.00E+00	8.77E-01	7.01E-01	9.55E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.17E-01	1.00E+00	9.94E-01
5.00E+06	1.00E+00	9.78E-01	1.00E+00	9.92E-01	1.00E+00	8.03E-01	6.08E-01	9.37E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	8.76E-01	1.00E+00	9.89E-01
7.00E+06	1.00E+00	9.69E-01	1.00E+00	9.85E-01	1.00E+00	7.19E-01	5.23E-01	9.08E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	8.47E-01	1.00E+00	9.84E-01
1.00E+07	1.00E+00	9.56E-01	1.00E+00	9.79E-01	1.00E+00	6.08E-01	4.48E-01	8.70E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	7.98E-01	1.00E+00	9.76E-01
2.00E+07	1.00E+00	8.90E-01	9.99E-01	9.38E-01	1.00E+00	3.36E-01	2.13E-01	6.83E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	6.00E-01	1.00E+00	9.30E-01
3.00E+07	1.00E+00	8.27E-01	9.94E-01	9.01E-01	1.00E+00	2.01E-01	1.48E-01	5.43E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	4.86E-01	1.00E+00	8.88E-01
5.00E+07	1.00E+00	6.79E-01	9.83E-01	7.76E-01	1.00E+00	2.24E-02	1.73E-02	3.08E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	3.44E-01	1.00E+00	7.87E-01
7.00E+07	1.00E+00	5.83E-01	9.66E-01	6.80E-01	1.00E+00	1.82E-03	1.59E-02	2.04E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	2.78E-01	1.00E+00	6.78E-01
1.00E+08	1.00E+00	5.00E-01	9.28E-01	5.84E-01	1.00E+00		8.36E-03	1.49E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	2.27E-01	1.00E+00	5.70E-01
2.00E+08	1.00E+00	2.05E-01	8.18E-01	2.95E-01	1.00E+00		1.11E-03	2.81E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	5.59E-02	1.00E+00	2.20E-01
3.00E+08	1.00E+00	1.09E-01	7.09E-01	1.63E-01	1.00E+00		1.11E-03	2.12E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	2.84E-02	1.00E+00	1.15E-01
5.00E+08	1.00E+00	3.04E-02	4.70E-01	4.53E-02	1.00E+00			8.87E-04	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.98E-01	9.98E-01		1.00E+00	2.16E-02
7.00E+08	1.00E+00	1.84E-02	3.02E-01	3.33E-02	9.99E-01				1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.90E-01	9.90E-01		1.00E+00	1.23E-02
1.00E+09	1.00E+00	8.80E-03	1.78E-01	1.62E-02	9.98E-01				1.00E+00	9.99E-01	1.00E+00	1.00E+00	9.71E-01	9.71E-01		1.00E+00	5.78E-03
2.00E+09	1.00E+00	1.10E-04	7.31E-02	3.25E-04	9.81E-01				9.98E-01	9.70E-01	1.00E+00	1.00E+00	7.62E-01	7.58E-01		9.94E-01	
3.00E+09	9.95E-01	6.58E-05	4.17E-02	1.80E-04	8.76E-01				9.69E-01	8.68E-01	9.99E-01	9.92E-01	4.75E-01	4.74E-01		9.65E-01	
5.00E+09	9.02E-01		6.34E-03		5.50E-01				6.79E-01	4.89E-01	9.16E-01	8.29E-01	2.31E-01	2.31E-01		7.33E-01	
7.00E+09	6.79E-01				3.79E-01				4.68E-01	3.34E-01	6.94E-01	5.84E-01	1.12E-01	1.11E-01		4.95E-01	
1.00E+10	4.59E-01				2.50E-01				2.98E-01	1.94E-01	4.69E-01	3.54E-01	3.59E-02	3.53E-02		3.08E-01	
2.00E+10	1.05E-01				5.25E-02				1.46E-02	3.14E-03	8.15E-02	8.45E-02				5.33E-02	
3.00E+10	1.61E-02				6.65E-03					1.39E-04	1.82E-03	1.96E-02				8.13E-03	
5.00E+10	4.55E-05											3.01E-06				3.01E-06	
7.00E+10																	
1.00E+11																	
2.00E+11																	
3.00E+11																	
5.00E+11																	
7.00E+11																	
1.00E+12																	
Mean	1.13E+10	1.41E+08	7.19E+08	1.79E+08	7.72E+09	1.72E+07	1.35E+07	5.13E+07	8.00E+09	6.46E+09	1.11E+10	1.01E+10	3.76E+09	3.76E+09	5.90E+07	8.87E+09	1.50E+08

TABLE 7 (continued)

Economic	Probability of Exceedence, Total Economic Cost (2016 Dollars, Assuming 7% Inflation Rate)																
Cost ($)	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+06	1.00E+00	9.99E-01	1.00E+00	1.00E+00	1.00E+00	9.68E-01	8.63E-01	9.91E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.87E-01	1.00E+00	9.99E-01
2.00E+06	1.00E+00	9.95E-01	1.00E+00	9.99E-01	1.00E+00	9.49E-01	8.21E-01	9.81E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.76E-01	1.00E+00	9.97E-01
3.00E+06	1.00E+00	9.91E-01	1.00E+00	9.99E-01	1.00E+00	9.31E-01	7.80E-01	9.78E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.57E-01	1.00E+00	9.97E-01
5.00E+06	1.00E+00	9.89E-01	1.00E+00	9.97E-01	1.00E+00	8.86E-01	7.10E-01	9.62E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.25E-01	1.00E+00	9.95E-01
7.00E+06	1.00E+00	9.84E-01	1.00E+00	9.95E-01	1.00E+00	8.55E-01	6.55E-01	9.50E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.01E-01	1.00E+00	9.91E-01
1.00E+07	1.00E+00	9.75E-01	1.00E+00	9.91E-01	1.00E+00	7.77E-01	5.86E-01	9.32E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	8.72E-01	1.00E+00	9.89E-01
2.00E+07	1.00E+00	9.52E-01	1.00E+00	9.76E-01	1.00E+00	5.83E-01	4.17E-01	8.55E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	7.87E-01	1.00E+00	9.70E-01
3.00E+07	1.00E+00	9.07E-01	1.00E+00	9.48E-01	1.00E+00	4.12E-01	2.53E-01	7.57E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	6.66E-01	1.00E+00	9.47E-01
5.00E+07	1.00E+00	8.49E-01	9.94E-01	9.10E-01	1.00E+00	2.45E-01	1.74E-01	5.82E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	5.14E-01	1.00E+00	9.02E-01
7.00E+07	1.00E+00	7.76E-01	9.92E-01	8.66E-01	1.00E+00	9.16E-02	6.61E-02	4.45E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	4.29E-01	1.00E+00	8.50E-01
1.00E+08	1.00E+00	6.48E-01	9.77E-01	7.61E-01	1.00E+00	1.49E-02	1.68E-02	2.68E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	3.20E-01	1.00E+00	7.64E-01
2.00E+08	1.00E+00	4.58E-01	9.19E-01	5.48E-01	1.00E+00		4.42E-03	1.21E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.92E-01	1.00E+00	5.41E-01
3.00E+08	1.00E+00	2.99E-01	8.55E-01	3.81E-01	1.00E+00		1.96E-03	4.08E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.10E-02	1.00E+00	3.25E-01
5.00E+08	1.00E+00	1.25E-01	7.35E-01	1.85E-01	1.00E+00		1.11E-03	2.14E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	2.84E-02	1.00E+00	1.31E-01
7.00E+08	1.00E+00	4.59E-02	6.07E-01	7.79E-02	1.00E+00			3.33E-03	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	7.38E-05	1.00E+00	5.33E-02
1.00E+09	1.00E+00	3.02E-02	4.26E-01	4.20E-02	9.99E-01				1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.98E-01	9.98E-01		1.00E+00	1.66E-02
2.00E+09	1.00E+00	7.29E-03	1.60E-01	1.45E-02	9.98E-01				1.00E+00	9.99E-01	1.00E+00	1.00E+00	9.67E-01	9.67E-01		1.00E+00	4.55E-03
3.00E+09	1.00E+00	1.23E-04	9.34E-02	5.55E-04	9.81E-01				1.00E+00	9.88E-01	1.00E+00	1.00E+00	8.73E-01	8.71E-01		9.99E-01	
5.00E+09	9.98E-01	6.58E-05	4.34E-02	1.60E-04	9.12E-01				9.83E-01	9.09E-01	1.00E+00	9.98E-01	5.47E-01	5.44E-01		9.79E-01	
7.00E+09	9.79E-01		1.33E-02		7.48E-01				8.80E-01	7.09E-01	9.88E-01	9.50E-01	3.56E-01	3.57E-01		8.85E-01	
1.00E+10	8.66E-01		6.34E-03		5.02E-01				6.12E-01	4.49E-01	8.78E-01	7.78E-01	1.97E-01	1.94E-01		6.63E-01	
2.00E+10	4.20E-01				2.24E-01				2.54E-01	1.58E-01	4.30E-01	3.07E-01	2.50E-02	2.42E-02		2.64E-01	
3.00E+10	1.94E-01				9.09E-02				5.00E-02	3.20E-02	1.78E-01	1.41E-01	3.57E-05	1.66E-05		1.13E-01	
5.00E+10	3.13E-02				1.12E-02				3.17E-04	3.02E-04	1.07E-02	3.16E-02				1.50E-02	
7.00E+10	2.87E-03				1.14E-03						3.63E-05	4.36E-03				2.00E-03	
1.00E+11																	
2.00E+11																	
3.00E+11																	
5.00E+11																	
7.00E+11																	
1.00E+12																	
Mean	2.09E+10	2.59E+08	1.32E+09	3.30E+08	1.42E+10	3.16E+07	2.48E+07	9.44E+07	1.47E+10	1.19E+10	2.03E+10	1.86E+10	6.92E+09	6.91E+09	1.09E+08	1.63E+10	2.76E+08

TABLE 7 (continued)

Economic Cost ($)	Probability of Exceedence, Population Dependent Cost (2016 Dollars, Assuming 3% Inflation Rate)																
	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+06	1.00E+00	9.87E-01	1.00E+00	9.93E-01	1.00E+00	9.35E-01	7.85E-01	9.73E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.59E-01	1.00E+00	9.93E-01
2.00E+06	1.00E+00	9.85E-01	1.00E+00	9.92E-01	1.00E+00	8.93E-01	7.23E-01	9.62E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.24E-01	1.00E+00	9.92E-01
3.00E+06	1.00E+00	9.78E-01	1.00E+00	9.86E-01	1.00E+00	8.25E-01	6.35E-01	9.40E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	8.90E-01	1.00E+00	9.88E-01
5.00E+06	1.00E+00	9.66E-01	9.99E-01	9.79E-01	1.00E+00	7.60E-01	5.82E-01	9.16E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	8.56E-01	1.00E+00	9.79E-01
7.00E+06	1.00E+00	9.55E-01	9.99E-01	9.75E-01	1.00E+00	6.70E-01	4.76E-01	8.78E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	8.26E-01	1.00E+00	9.74E-01
1.00E+07	1.00E+00	9.42E-01	9.97E-01	9.67E-01	1.00E+00	5.61E-01	4.13E-01	8.28E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	7.78E-01	1.00E+00	9.64E-01
2.00E+07	1.00E+00	8.58E-01	9.92E-01	9.09E-01	1.00E+00	3.05E-01	2.09E-01	6.15E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	5.53E-01	1.00E+00	9.02E-01
3.00E+07	1.00E+00	7.81E-01	9.85E-01	8.66E-01	1.00E+00	1.77E-01	1.26E-01	4.93E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	4.63E-01	1.00E+00	8.52E-01
5.00E+07	1.00E+00	6.38E-01	9.66E-01	7.44E-01	1.00E+00	1.62E-02	1.70E-02	2.58E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	3.18E-01	1.00E+00	7.51E-01
7.00E+07	1.00E+00	5.57E-01	9.44E-01	6.39E-01	1.00E+00		1.58E-02	1.87E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	2.76E-01	1.00E+00	6.33E-01
1.00E+08	1.00E+00	4.93E-01	9.10E-01	5.69E-01	1.00E+00		8.28E-03	1.32E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	2.13E-01	1.00E+00	5.53E-01
2.00E+08	1.00E+00	1.95E-01	8.02E-01	2.80E-01	1.00E+00		1.11E-03	2.67E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	5.27E-02	1.00E+00	2.06E-01
3.00E+08	1.00E+00	1.03E-01	6.94E-01	1.49E-01	1.00E+00		1.11E-03	2.12E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	2.84E-02	1.00E+00	1.10E-01
5.00E+08	1.00E+00	3.03E-02	4.45E-01	4.46E-02	9.99E-01			8.87E-04	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.98E-01	9.98E-01		1.00E+00	1.90E-02
7.00E+08	1.00E+00	1.82E-02	2.84E-01	3.32E-02	9.99E-01				1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.85E-01	9.85E-01		1.00E+00	1.21E-02
1.00E+09	1.00E+00	8.78E-03	1.67E-01	1.59E-02	9.98E-01				1.00E+00	9.99E-01	1.00E+00	1.00E+00	9.67E-01	9.68E-01		1.00E+00	5.52E-03
2.00E+09	1.00E+00	1.10E-04	7.27E-02	3.25E-04	9.57E-01				9.97E-01	9.66E-01	1.00E+00	9.99E-01	7.38E-01	7.34E-01		9.93E-01	
3.00E+09	9.95E-01	6.58E-05	4.13E-02	1.60E-04	8.64E-01				9.60E-01	8.39E-01	9.99E-01	9.89E-01	4.57E-01	4.55E-01		9.50E-01	
5.00E+09	8.90E-01		6.34E-03		5.31E-01				6.49E-01	4.77E-01	8.99E-01	8.10E-01	2.23E-01	2.21E-01		7.05E-01	
7.00E+09	6.55E-01				3.69E-01				4.57E-01	3.25E-01	6.71E-01	5.64E-01	1.08E-01	1.06E-01		4.67E-01	
1.00E+10	4.48E-01				2.46E-01				2.87E-01	1.88E-01	4.54E-01	3.42E-01	3.38E-02	3.34E-02		2.97E-01	
2.00E+10	9.92E-02				5.07E-02				1.41E-02	2.90E-03	7.62E-02	8.17E-02				5.21E-02	
3.00E+10	1.50E-02				6.65E-03					8.29E-05	1.80E-03	1.72E-02				8.12E-03	
5.00E+10	3.39E-05											3.01E-06					
7.00E+10																	
1.00E+11																	
2.00E+11																	
3.00E+11																	
5.00E+11																	
7.00E+11																	
1.00E+12																	
Mean	1.11E+10	1.34E+08	6.95E+08	1.70E+08	7.57E+09	1.57E+07	1.25E+07	4.73E+07	7.81E+09	6.32E+09	1.08E+10	9.94E+09	3.66E+09	3.66E+09	5.63E+07	8.68E+09	1.42E+08

TABLE 7 (continued)

Economic Cost ($)	Probability of Exceedence, Population Dependent Cost (2016 Dollars, Assuming 7% Inflation Rate)																
	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+06	1.00E+00	9.91E-01	1.00E+00	9.98E-01	1.00E+00	9.54E-01	8.19E-01	9.85E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.75E-01	1.00E+00	9.97E-01
2.00E+06	1.00E+00	9.87E-01	1.00E+00	9.93E-01	1.00E+00	9.32E-01	7.85E-01	9.72E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.58E-01	1.00E+00	9.93E-01
3.00E+06	1.00E+00	9.86E-01	1.00E+00	9.92E-01	1.00E+00	9.09E-01	7.54E-01	9.68E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.36E-01	1.00E+00	9.92E-01
5.00E+06	1.00E+00	9.80E-01	1.00E+00	9.88E-01	1.00E+00	8.38E-01	6.56E-01	9.46E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	8.94E-01	1.00E+00	9.89E-01
7.00E+06	1.00E+00	9.69E-01	1.00E+00	9.85E-01	1.00E+00	8.02E-01	6.07E-01	9.27E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	8.75E-01	1.00E+00	9.83E-01
1.00E+07	1.00E+00	9.63E-01	9.99E-01	9.78E-01	1.00E+00	7.35E-01	5.41E-01	9.04E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	8.51E-01	1.00E+00	9.79E-01
2.00E+07	1.00E+00	9.37E-01	9.97E-01	9.63E-01	1.00E+00	5.33E-01	3.79E-01	8.11E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	7.52E-01	1.00E+00	9.60E-01
3.00E+07	1.00E+00	8.85E-01	9.94E-01	9.29E-01	1.00E+00	3.78E-01	2.41E-01	6.83E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	6.07E-01	1.00E+00	9.21E-01
5.00E+07	1.00E+00	8.08E-01	9.86E-01	8.79E-01	1.00E+00	2.20E-01	1.65E-01	5.27E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	4.91E-01	1.00E+00	8.66E-01
7.00E+07	1.00E+00	7.36E-01	9.80E-01	8.16E-01	1.00E+00	7.66E-02	5.52E-02	4.04E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	4.08E-01	1.00E+00	8.18E-01
1.00E+08	1.00E+00	6.04E-01	9.56E-01	7.20E-01	1.00E+00	1.11E-02	1.68E-02	2.37E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	2.99E-01	1.00E+00	7.18E-01
2.00E+08	1.00E+00	4.18E-01	9.05E-01	5.20E-01	1.00E+00		4.42E-03	1.04E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.77E-01	1.00E+00	5.09E-01
3.00E+08	1.00E+00	2.76E-01	8.36E-01	3.61E-01	1.00E+00		1.96E-03	4.05E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.10E-02	1.00E+00	2.94E-01
5.00E+08	1.00E+00	1.21E-01	7.16E-01	1.79E-01	1.00E+00		1.11E-03	2.13E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	2.84E-02	1.00E+00	1.25E-01
7.00E+08	1.00E+00	4.15E-02	5.87E-01	7.10E-02	1.00E+00			2.42E-03	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00		1.00E+00	4.58E-02
1.00E+09	1.00E+00	3.01E-02	3.82E-01	4.14E-02	9.99E-01				1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.98E-01	9.98E-01		1.00E+00	1.65E-02
2.00E+09	1.00E+00	7.28E-03	1.57E-01	1.45E-02	9.98E-01				1.00E+00	9.97E-01	1.00E+00	1.00E+00	9.56E-01	9.56E-01		1.00E+00	4.36E-03
3.00E+09	1.00E+00	1.23E-04	9.29E-02	5.28E-04	9.80E-01				1.00E+00	9.83E-01	1.00E+00	1.00E+00	8.44E-01	8.44E-01		9.98E-01	
5.00E+09	9.97E-01	6.58E-05	4.33E-02	1.60E-04	9.00E-01				9.75E-01	8.96E-01	9.99E-01	9.95E-01	5.19E-01	5.21E-01		9.74E-01	
7.00E+09	9.72E-01		1.12E-02		7.24E-01				8.52E-01	6.62E-01	9.82E-01	9.37E-01	3.43E-01	3.45E-01		8.61E-01	
1.00E+10	8.37E-01		6.34E-03		4.92E-01				5.91E-01	4.33E-01	8.54E-01	7.51E-01	1.89E-01	1.87E-01		6.37E-01	
2.00E+10	4.13E-01				2.23E-01				2.44E-01	1.53E-01	4.21E-01	3.01E-01	2.28E-02	2.28E-02		2.59E-01	
3.00E+10	1.83E-01				8.79E-02				4.70E-02	2.79E-02	1.70E-01	1.37E-01				1.11E-01	
5.00E+10	3.01E-02				1.10E-02				3.17E-04	2.98E-04	9.59E-03	3.15E-02				1.24E-02	
7.00E+10	2.65E-03				1.11E-03						3.63E-05	3.55E-03				2.00E-03	
1.00E+11																	
2.00E+11																	
3.00E+11																	
5.00E+11																	
7.00E+11																	
1.00E+12																	
Mean	2.04E+10	2.47E+08	1.28E+09	3.14E+08	1.39E+10	2.89E+07	2.31E+07	8.70E+07	1.44E+10	1.16E+10	1.99E+10	1.83E+10	6.74E+09	6.73E+09	1.04E+08	1.60E+10	2.61E+08

TABLE 7 (continued)

Economic Cost ($)	Probability of Exceedence, Farm Dependent Cost (2016 Dollars, Assuming 3% Inflation Rate)																
	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+06	1.00E+00	8.38E-01	9.96E-01	9.18E-01	1.00E+00	5.08E-01	3.63E-01	6.58E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	6.23E-01	1.00E+00	9.05E-01
2.00E+06	1.00E+00	6.27E-01	9.81E-01	7.48E-01	1.00E+00	3.47E-01	1.29E-01	5.26E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	4.31E-01	1.00E+00	7.02E-01
3.00E+06	1.00E+00	5.23E-01	9.50E-01	6.49E-01	1.00E+00	1.33E-01	3.97E-02	4.57E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	3.47E-01	1.00E+00	5.92E-01
5.00E+06	1.00E+00	4.15E-01	8.76E-01	5.10E-01	1.00E+00	5.79E-03	2.81E-02	3.66E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	2.01E-01	1.00E+00	4.97E-01
7.00E+06	1.00E+00	3.74E-01	7.59E-01	4.49E-01	1.00E+00	1.55E-03	1.11E-03	2.38E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.31E-01	1.00E+00	4.40E-01
1.00E+07	1.00E+00	2.05E-01	6.87E-01	3.31E-01	1.00E+00			8.12E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.59E-02	1.00E+00	3.24E-01
2.00E+07	1.00E+00	7.72E-02	4.15E-01	1.20E-01	1.00E+00			4.14E-03	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.91E-01	9.91E-01		1.00E+00	1.15E-01
3.00E+07	1.00E+00	1.62E-02	2.96E-01	4.53E-02	9.91E-01				1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.63E-01	9.63E-01		1.00E+00	1.99E-02
5.00E+07	1.00E+00		1.58E-01	2.63E-04	9.66E-01				9.99E-01	9.88E-01	1.00E+00	9.99E-01	8.36E-01	8.36E-01		9.99E-01	
7.00E+07	9.99E-01		7.30E-03		9.19E-01				9.95E-01	9.32E-01	1.00E+00	9.95E-01	6.39E-01	6.37E-01		9.82E-01	
1.00E+08	9.78E-01				7.72E-01				9.28E-01	8.08E-01	9.94E-01	9.37E-01	4.43E-01	4.42E-01		8.93E-01	
2.00E+08	6.02E-01				1.44E-01				3.56E-01	1.60E-01	6.38E-01	4.32E-01	3.68E-02	3.60E-02		3.60E-01	
3.00E+08	1.72E-01				1.68E-02				4.89E-02	8.74E-03	1.95E-01	7.56E-02	2.07E-04	2.07E-04		8.93E-02	
5.00E+08	1.79E-03										1.94E-03						
7.00E+08																	
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2.00E+11																	
3.00E+11																	
5.00E+11																	
7.00E+11																	
1.00E+12																	
Mean	2.30E+08	6.76E+06	2.39E+07	9.03E+06	1.42E+08	1.45E+06	9.50E+05	4.04E+06	1.83E+08	1.44E+08	2.36E+08	1.98E+08	9.84E+07	9.85E+07	2.76E+06	1.85E+08	8.29E+06

TABLE 7 (continued)

Economic Cost ($)	Probability of Exceedence, Farm Dependent Cost (2016 Dollars, Assuming 7% Inflation Rate)																
	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+06	1.00E+00	9.41E-01	9.99E-01	9.76E-01	1.00E+00	5.84E-01	4.50E-01	8.32E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	7.73E-01	1.00E+00	9.73E-01
2.00E+06	1.00E+00	8.16E-01	9.95E-01	9.08E-01	1.00E+00	5.01E-01	3.44E-01	6.37E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	6.00E-01	1.00E+00	8.91E-01
3.00E+06	1.00E+00	6.83E-01	9.87E-01	8.04E-01	1.00E+00	4.23E-01	2.46E-01	5.54E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	4.57E-01	1.00E+00	7.67E-01
5.00E+06	1.00E+00	5.52E-01	9.62E-01	6.85E-01	1.00E+00	1.93E-01	4.26E-02	4.83E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	3.71E-01	1.00E+00	6.14E-01
7.00E+06	1.00E+00	4.64E-01	9.28E-01	5.84E-01	1.00E+00	5.36E-02	3.37E-02	3.99E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	2.64E-01	1.00E+00	5.48E-01
1.00E+07	1.00E+00	4.07E-01	8.43E-01	4.86E-01	1.00E+00	3.34E-03	1.71E-02	3.50E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.89E-01	1.00E+00	4.80E-01
2.00E+07	1.00E+00	1.96E-01	6.67E-01	2.99E-01	1.00E+00			7.38E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.02E-02	1.00E+00	2.97E-01
3.00E+07	1.00E+00	1.33E-01	5.27E-01	2.23E-01	1.00E+00			7.55E-03	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.96E-01	9.96E-01	1.98E-03	1.00E+00	1.76E-01
5.00E+07	1.00E+00	3.26E-02	3.25E-01	6.90E-02	9.98E-01				1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.76E-01	9.76E-01		1.00E+00	3.61E-02
7.00E+07	1.00E+00	6.06E-04	2.62E-01	5.38E-03	9.84E-01				1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.22E-01	9.24E-01		1.00E+00	2.47E-03
1.00E+08	1.00E+00		1.20E-01		9.62E-01				9.98E-01	9.74E-01	1.00E+00	9.99E-01	7.99E-01	8.05E-01		9.97E-01	
2.00E+08	9.64E-01				7.26E-01				8.81E-01	7.32E-01	9.88E-01	9.18E-01	3.91E-01	3.94E-01		8.63E-01	
3.00E+08	7.93E-01				3.00E-01				5.47E-01	3.21E-01	8.34E-01	6.30E-01	1.09E-01	1.10E-01		5.40E-01	
5.00E+08	2.43E-01				2.47E-02				1.13E-01	2.01E-02	2.94E-01	1.47E-01	6.28E-04	6.28E-04		1.49E-01	
7.00E+08	6.57E-02				1.77E-04				2.29E-03		4.35E-02	9.27E-03				6.05E-03	
1.00E+09																	
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5.00E+11																	
7.00E+11																	
1.00E+12																	
Mean	4.23E+08	1.24E+07	4.39E+07	1.66E+07	2.62E+08	2.66E+06	1.75E+06	7.42E+06	3.36E+08	2.65E+08	4.35E+08	3.61E+08	1.81E+08	1.81E+08	5.08E+06	3.41E+08	1.52E+07

TABLE 7 (continued)

Economic Cost ($)	Probability of Exceedence, Population-Dependent Decontamination Cost (2016 Dollars, Assuming 3% Inflation Rate)																
	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+06	1.00E+00	9.77E-01	1.00E+00	9.87E-01	1.00E+00	8.24E-01	6.54E-01	9.39E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	8.90E-01	1.00E+00	9.89E-01
2.00E+06	1.00E+00	9.59E-01	9.99E-01	9.76E-01	1.00E+00	6.89E-01	5.12E-01	8.92E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	8.34E-01	1.00E+00	9.77E-01
3.00E+06	1.00E+00	9.43E-01	9.97E-01	9.70E-01	1.00E+00	5.79E-01	4.24E-01	8.39E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	7.79E-01	1.00E+00	9.66E-01
5.00E+06	1.00E+00	8.87E-01	9.93E-01	9.36E-01	1.00E+00	3.82E-01	2.44E-01	7.05E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	6.45E-01	1.00E+00	9.35E-01
7.00E+06	1.00E+00	8.21E-01	9.87E-01	8.88E-01	1.00E+00	2.81E-01	1.88E-01	5.91E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	5.41E-01	1.00E+00	8.94E-01
1.00E+07	1.00E+00	7.60E-01	9.81E-01	8.41E-01	1.00E+00	1.86E-01	1.35E-01	4.88E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	4.65E-01	1.00E+00	8.43E-01
2.00E+07	1.00E+00	5.77E-01	9.41E-01	6.72E-01	1.00E+00	6.17E-03	1.59E-02	2.12E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	2.82E-01	1.00E+00	6.75E-01
3.00E+07	1.00E+00	5.13E-01	8.92E-01	5.86E-01	1.00E+00		8.28E-03	1.36E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	2.30E-01	1.00E+00	5.73E-01
5.00E+07	1.00E+00	2.70E-01	8.18E-01	3.36E-01	1.00E+00		1.48E-03	3.22E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	6.53E-02	1.00E+00	2.71E-01
7.00E+07	1.00E+00	1.82E-01	7.74E-01	2.63E-01	1.00E+00		1.11E-03	2.16E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	2.96E-02	1.00E+00	1.70E-01
1.00E+08	1.00E+00	6.58E-02	6.29E-01	1.12E-01	9.97E-01			6.38E-03	1.00E+00	9.99E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	3.92E-03	1.00E+00	8.30E-02
2.00E+08	1.00E+00	2.89E-02	3.15E-01	4.06E-02	9.79E-01				9.99E-01	9.96E-01	1.00E+00	1.00E+00	9.83E-01	9.83E-01		9.99E-01	1.61E-02
3.00E+08	1.00E+00	7.33E-03	1.95E-01	1.57E-02	9.60E-01				9.99E-01	9.90E-01	1.00E+00	9.97E-01	9.59E-01	9.59E-01		9.97E-01	4.84E-03
5.00E+08	9.95E-01	1.23E-04	9.46E-02	5.03E-04	8.74E-01				9.95E-01	9.58E-01	1.00E+00	9.89E-01	8.29E-01	8.31E-01		9.77E-01	
7.00E+08	9.80E-01	6.58E-05	7.28E-02	1.65E-04	7.87E-01				9.70E-01	8.71E-01	9.94E-01	9.64E-01	6.50E-01	6.48E-01		9.27E-01	
1.00E+09	9.25E-01		3.83E-02		6.44E-01				8.85E-01	7.01E-01	9.73E-01	8.69E-01	4.46E-01	4.45E-01		8.08E-01	
2.00E+09	6.07E-01				3.09E-01				4.77E-01	3.32E-01	6.88E-01	5.03E-01	1.45E-01	1.45E-01		4.32E-01	
3.00E+09	3.72E-01				1.70E-01				2.76E-01	1.66E-01	4.29E-01	2.61E-01	6.39E-02	6.29E-02		2.35E-01	
5.00E+09	1.42E-01				5.26E-02				7.54E-02	3.78E-02	1.75E-01	9.23E-02	6.40E-03	6.39E-03		7.82E-02	
7.00E+09	3.62E-02				8.38E-03				9.66E-03	2.68E-03	4.85E-02	1.64E-02				1.07E-02	
1.00E+10	3.39E-04										1.17E-04						
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3.00E+11																	
5.00E+11																	
7.00E+11																	
1.00E+12																	
Mean	2.91E+09	4.36E+07	2.23E+08	5.48E+07	1.80E+09	5.23E+06	4.08E+06	1.48E+07	2.40E+09	1.66E+09	3.20E+09	2.45E+09	1.20E+09	1.20E+09	1.72E+07	2.24E+09	4.44E+07

TABLE 7 (continued)

Economic Cost ($)	Probability of Exceedence, Population-Dependent Decontamination Cost (2016 Dollars, Assuming 7% Inflation Rate)																
	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+06	1.00E+00	9.85E-01	1.00E+00	9.92E-01	1.00E+00	9.05E-01	7.51E-01	9.68E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.33E-01	1.00E+00	9.92E-01
2.00E+06	1.00E+00	9.75E-01	1.00E+00	9.85E-01	1.00E+00	8.14E-01	6.32E-01	9.35E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	8.84E-01	1.00E+00	9.84E-01
3.00E+06	1.00E+00	9.63E-01	9.99E-01	9.80E-01	1.00E+00	7.33E-01	5.51E-01	9.06E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	8.51E-01	1.00E+00	9.79E-01
5.00E+06	1.00E+00	9.48E-01	9.98E-01	9.71E-01	1.00E+00	6.01E-01	4.52E-01	8.51E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	7.95E-01	1.00E+00	9.67E-01
7.00E+06	1.00E+00	9.30E-01	9.95E-01	9.62E-01	1.00E+00	4.92E-01	3.48E-01	7.91E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	7.37E-01	1.00E+00	9.59E-01
1.00E+07	1.00E+00	8.64E-01	9.93E-01	9.21E-01	1.00E+00	3.51E-01	2.32E-01	6.77E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	6.10E-01	1.00E+00	9.26E-01
2.00E+07	1.00E+00	7.51E-01	9.78E-01	8.31E-01	1.00E+00	1.48E-01	1.12E-01	4.56E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	4.40E-01	1.00E+00	8.30E-01
3.00E+07	1.00E+00	6.30E-01	9.52E-01	7.31E-01	1.00E+00	2.83E-02	1.74E-02	2.74E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	3.18E-01	1.00E+00	7.46E-01
5.00E+07	1.00E+00	5.40E-01	9.11E-01	6.08E-01	1.00E+00		1.10E-02	1.63E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	2.63E-01	1.00E+00	5.98E-01
7.00E+07	1.00E+00	3.47E-01	8.60E-01	4.55E-01	1.00E+00		1.96E-03	6.91E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.25E-01	1.00E+00	4.30E-01
1.00E+08	1.00E+00	2.64E-01	8.10E-01	3.20E-01	1.00E+00		1.27E-03	3.00E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	6.12E-02	1.00E+00	2.42E-01
2.00E+08	1.00E+00	5.87E-02	5.95E-01	9.48E-02	9.96E-01			1.51E-03	1.00E+00	9.99E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00		1.00E+00	5.99E-02
3.00E+08	1.00E+00	3.03E-02	4.05E-01	4.25E-02	9.93E-01				1.00E+00	9.98E-01	1.00E+00	1.00E+00	9.93E-01	9.93E-01		1.00E+00	1.72E-02
5.00E+08	1.00E+00	1.36E-02	2.48E-01	2.78E-02	9.68E-01				9.99E-01	9.93E-01	1.00E+00	9.99E-01	9.67E-01	9.67E-01		9.97E-01	1.02E-02
7.00E+08	9.99E-01	5.68E-03	1.32E-01	1.10E-02	9.23E-01				9.98E-01	9.78E-01	1.00E+00	9.94E-01	9.25E-01	9.26E-01		9.94E-01	3.29E-03
1.00E+09	9.92E-01	1.23E-04	8.85E-02	5.03E-04	8.56E-01				9.89E-01	9.46E-01	9.98E-01	9.87E-01	7.90E-01	7.86E-01		9.69E-01	
2.00E+09	8.99E-01		2.05E-02		6.00E-01				8.44E-01	6.48E-01	9.66E-01	8.29E-01	4.09E-01	4.09E-01		7.78E-01	
3.00E+09	7.28E-01		2.74E-03		4.00E-01				5.84E-01	4.19E-01	8.06E-01	6.28E-01	2.15E-01	2.14E-01		5.64E-01	
5.00E+09	4.22E-01				1.95E-01				3.14E-01	2.04E-01	4.79E-01	3.12E-01	7.67E-02	7.67E-02		2.78E-01	
7.00E+09	2.51E-01				1.09E-01				1.70E-01	1.03E-01	2.93E-01	1.65E-01	2.64E-02	2.60E-02		1.34E-01	
1.00E+10	1.16E-01				3.63E-02				5.29E-02	2.55E-02	1.47E-01	6.84E-02	2.79E-04	2.79E-04		5.92E-02	
2.00E+10	2.14E-05																
3.00E+10																	
5.00E+10																	
7.00E+10																	
1.00E+11																	
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3.00E+11																	
5.00E+11																	
7.00E+11																	
1.00E+12																	
Mean	5.35E+09	8.02E+07	4.10E+08	1.01E+08	3.32E+09	9.63E+06	7.50E+06	2.72E+07	4.41E+09	3.42E+09	5.88E+09	4.51E+09	2.21E+09	2.21E+09	3.17E+07	4.12E+09	8.16E+07

TABLE 7 (continued)

Economic Cost ($)	Probability of Exceedence, Farm-Dependent Decontamination Cost (2016 Dollars, Assuming 3% Inflation Rate)																
	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+06	1.00E+00	3.46E-01	9.23E-01	5.10E-01	1.00E+00			3.20E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	2.27E-02	1.00E+00	4.82E-01
2.00E+06	1.00E+00	1.17E-01	8.15E-01	1.87E-01	1.00E+00				1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00		1.00E+00	9.30E-02
3.00E+06	1.00E+00	7.22E-02	7.31E-01	1.39E-01	1.00E+00				1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00		1.00E+00	5.27E-02
5.00E+06	1.00E+00	1.41E-03	4.05E-01	4.54E-03	1.00E+00				1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00		1.00E+00	
7.00E+06	1.00E+00	3.22E-04	3.19E-01	1.18E-03	9.99E-01				1.00E+00	9.99E-01	1.00E+00	1.00E+00	9.94E-01	9.94E-01		1.00E+00	
1.00E+07	1.00E+00		1.55E-01		9.92E-01				1.00E+00	9.92E-01	1.00E+00	1.00E+00	9.63E-01	9.63E-01		1.00E+00	
2.00E+07	1.00E+00		3.50E-03		9.36E-01				9.98E-01	9.76E-01	1.00E+00	9.98E-01	8.12E-01	8.13E-01		9.92E-01	
3.00E+07	9.98E-01				8.24E-01				9.94E-01	9.04E-01	9.99E-01	9.88E-01	5.02E-01	5.01E-01		9.53E-01	
5.00E+07	9.02E-01				5.08E-01				7.92E-01	5.20E-01	9.63E-01	8.08E-01	5.81E-02	5.75E-02		6.78E-01	
7.00E+07	6.37E-01				1.90E-01				3.75E-01	1.38E-01	7.18E-01	4.27E-01	2.37E-03	2.34E-03		3.47E-01	
1.00E+08	2.22E-01				2.99E-02				3.57E-02	4.86E-03	2.59E-01	9.03E-02				5.42E-02	
2.00E+08																	
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2.00E+11																	
3.00E+11																	
5.00E+11																	
7.00E+11																	
1.00E+12																	
Mean	8.14E+07	1.08E+06	5.51E+06	1.36E+06	5.19E+07	1.91E+05	1.34E+05	4.23E+05	6.54E+07	5.13E+07	8.51E+07	6.82E+07	3.02E+07	3.01E+07	4.53E+05	6.19E+07	1.13E+06

TABLE 7 (continued)

Economic Cost ($)	Probability of Exceedence, Farm-Dependent Decontamination Cost (2016 Dollars, Assuming 7% Inflation Rate)																
	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+06	1.00E+00	7.26E-01	9.74E-01	8.16E-01	1.00E+00	1.89E-04	1.93E-02	2.69E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	3.52E-01	1.00E+00	8.33E-01
2.00E+06	1.00E+00	3.15E-01	9.11E-01	4.39E-01	1.00E+00			1.30E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	4.39E-03	1.00E+00	3.93E-01
3.00E+06	1.00E+00	1.33E-01	8.64E-01	2.42E-01	1.00E+00			1.14E-04	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00		1.00E+00	1.41E-01
5.00E+06	1.00E+00	9.32E-02	7.59E-01	1.61E-01	1.00E+00				1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00		1.00E+00	6.93E-02
7.00E+06	1.00E+00	3.36E-03	5.21E-01	1.84E-02	1.00E+00				1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00		1.00E+00	7.65E-03
1.00E+07	1.00E+00	1.41E-03	3.93E-01	4.37E-03	1.00E+00				1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00		1.00E+00	
2.00E+07	1.00E+00		1.03E-01		9.91E-01				1.00E+00	9.91E-01	1.00E+00	1.00E+00	9.54E-01	9.54E-01		1.00E+00	
3.00E+07	1.00E+00		1.75E-02		9.66E-01				9.99E-01	9.80E-01	1.00E+00	1.00E+00	8.66E-01	8.66E-01		9.97E-01	
5.00E+07	9.99E-01				8.60E-01				9.96E-01	9.32E-01	9.99E-01	9.92E-01	6.00E-01	5.95E-01		9.66E-01	
7.00E+07	9.77E-01				7.22E-01				9.47E-01	7.64E-01	9.97E-01	9.53E-01	2.36E-01	2.30E-01		8.72E-01	
1.00E+08	8.62E-01				4.29E-01				7.23E-01	4.09E-01	9.36E-01	7.19E-01	2.58E-02	2.59E-02		5.98E-01	
2.00E+08	1.44E-01				1.89E-02				1.00E-02	2.25E-03	1.56E-01	4.88E-02				2.86E-02	
3.00E+08	9.80E-03										1.28E-03	5.55E-04					
5.00E+08																	
7.00E+08																	
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5.00E+11																	
7.00E+11																	
1.00E+12																	
Mean	1.50E+08	1.95E+06	1.01E+07	2.51E+06	9.54E+07	3.52E+05	2.47E+05	7.78E+05	1.20E+08	9.43E+07	1.57E+08	1.25E+08	5.56E+07	5.54E+07	8.34E+05	1.14E+08	2.07E+06

TABLE 7 (continued)

Economic Cost ($)	Probability of Exceedence, Population-Dependent Interdiction Cost (2016 Dollars, Assuming 3% Inflation Rate)																
	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+06	1.00E+00	9.86E-01	1.00E+00	9.92E-01	1.00E+00	9.18E-01	7.61E-01	9.70E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.43E-01	1.00E+00	9.92E-01
2.00E+06	1.00E+00	9.78E-01	1.00E+00	9.86E-01	1.00E+00	8.27E-01	6.22E-01	9.39E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	8.90E-01	1.00E+00	9.88E-01
3.00E+06	1.00E+00	9.67E-01	9.99E-01	9.82E-01	1.00E+00	7.82E-01	5.89E-01	9.21E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	8.63E-01	1.00E+00	9.81E-01
5.00E+06	1.00E+00	9.53E-01	9.99E-01	9.74E-01	1.00E+00	6.54E-01	4.69E-01	8.64E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	8.18E-01	1.00E+00	9.70E-01
7.00E+06	1.00E+00	9.32E-01	9.97E-01	9.56E-01	1.00E+00	5.48E-01	4.01E-01	8.14E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	7.46E-01	1.00E+00	9.59E-01
1.00E+07	1.00E+00	8.88E-01	9.92E-01	9.29E-01	1.00E+00	4.10E-01	2.54E-01	7.12E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	6.26E-01	1.00E+00	9.28E-01
2.00E+07	1.00E+00	7.73E-01	9.81E-01	8.55E-01	1.00E+00	1.65E-01	1.11E-01	4.91E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	4.59E-01	1.00E+00	8.50E-01
3.00E+07	1.00E+00	6.71E-01	9.63E-01	7.69E-01	1.00E+00	2.63E-02	1.96E-02	2.99E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	3.53E-01	1.00E+00	7.81E-01
5.00E+07	1.00E+00	5.29E-01	9.28E-01	6.08E-01	1.00E+00		1.51E-02	1.82E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	2.70E-01	1.00E+00	6.16E-01
7.00E+07	1.00E+00	4.42E-01	8.92E-01	5.40E-01	1.00E+00		6.78E-03	1.28E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.90E-01	1.00E+00	5.34E-01
1.00E+08	1.00E+00	2.49E-01	8.31E-01	3.46E-01	1.00E+00		1.96E-03	4.18E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.71E-02	1.00E+00	3.19E-01
2.00E+08	1.00E+00	1.08E-01	6.51E-01	1.53E-01	9.96E-01		1.11E-03	2.12E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	2.84E-02	1.00E+00	1.15E-01
3.00E+08	1.00E+00	3.06E-02	4.59E-01	5.08E-02	9.92E-01			8.87E-04	1.00E+00	9.99E-01	1.00E+00	1.00E+00	9.95E-01	9.95E-01		1.00E+00	2.92E-02
5.00E+08	1.00E+00	1.82E-02	2.41E-01	3.30E-02	9.71E-01				9.99E-01	9.95E-01	1.00E+00	9.99E-01	9.74E-01	9.74E-01		9.97E-01	1.21E-02
7.00E+08	1.00E+00	8.86E-03	1.61E-01	1.61E-02	9.54E-01				9.97E-01	9.86E-01	1.00E+00	9.97E-01	9.43E-01	9.43E-01		9.93E-01	5.83E-03
1.00E+09	9.97E-01	2.25E-04	9.52E-02	7.06E-04	9.09E-01				9.92E-01	9.59E-01	1.00E+00	9.89E-01	8.41E-01	8.40E-01		9.77E-01	2.87E-05
2.00E+09	9.35E-01	6.58E-05	3.69E-02	1.60E-04	6.61E-01				8.83E-01	7.04E-01	9.76E-01	8.97E-01	4.40E-01	4.39E-01		8.41E-01	
3.00E+09	7.77E-01		7.73E-03		4.56E-01				6.17E-01	4.53E-01	8.44E-01	7.03E-01	2.45E-01	2.43E-01		6.34E-01	
5.00E+09	4.80E-01				2.60E-01				3.57E-01	2.35E-01	5.15E-01	4.04E-01	7.90E-02	7.77E-02		3.49E-01	
7.00E+09	3.18E-01				1.49E-01				1.73E-01	9.89E-02	3.48E-01	2.25E-01	2.03E-02	2.03E-02		2.01E-01	
1.00E+10	1.40E-01				6.83E-02				4.23E-02	2.27E-02	1.43E-01	9.87E-02	1.92E-05	1.92E-05		9.04E-02	
2.00E+10	1.56E-02				7.51E-03					1.97E-04	3.90E-04	1.44E-02				6.72E-03	
3.00E+10	9.93E-04				7.56E-04					8.65E-06		8.13E-04				8.91E-04	
5.00E+10																	
7.00E+10																	
1.00E+11																	
2.00E+11																	
3.00E+11																	
5.00E+11																	
7.00E+11																	
1.00E+12																	
Mean	6.07E+09	8.65E+07	4.50E+08	1.11E+08	4.01E+09	1.04E+07	8.27E+06	3.21E+07	4.51E+09	3.60E+09	6.15E+09	5.42E+09	2.30E+09	2.29E+09	3.84E+07	4.89E+09	9.55E+07

TABLE 7 (continued)

Economic Cost ($)	Probability of Exceedence, Population-Dependent Interdiction Cost (2016 Dollars, Assuming 7% Inflation Rate)																
	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+06	1.00E+00	9.89E-01	1.00E+00	9.95E-01	1.00E+00	9.41E-01	7.90E-01	9.77E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.66E-01	1.00E+00	9.93E-01
2.00E+06	1.00E+00	9.86E-01	1.00E+00	9.92E-01	1.00E+00	9.12E-01	7.51E-01	9.69E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.37E-01	1.00E+00	9.92E-01
3.00E+06	1.00E+00	9.82E-01	1.00E+00	9.92E-01	1.00E+00	8.63E-01	6.77E-01	9.55E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.02E-01	1.00E+00	9.91E-01
5.00E+06	1.00E+00	9.68E-01	9.99E-01	9.83E-01	1.00E+00	7.93E-01	5.98E-01	9.25E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	8.66E-01	1.00E+00	9.82E-01
7.00E+06	1.00E+00	9.63E-01	9.99E-01	9.78E-01	1.00E+00	7.42E-01	5.48E-01	9.02E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	8.49E-01	1.00E+00	9.78E-01
1.00E+07	1.00E+00	9.51E-01	9.98E-01	9.71E-01	1.00E+00	6.17E-01	4.27E-01	8.52E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	8.06E-01	1.00E+00	9.68E-01
2.00E+07	1.00E+00	8.78E-01	9.91E-01	9.24E-01	1.00E+00	3.85E-01	2.37E-01	6.86E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	5.99E-01	1.00E+00	9.18E-01
3.00E+07	1.00E+00	8.20E-01	9.85E-01	8.87E-01	1.00E+00	2.58E-01	1.82E-01	5.68E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	5.02E-01	1.00E+00	8.79E-01
5.00E+07	1.00E+00	7.13E-01	9.71E-01	7.94E-01	1.00E+00	4.47E-02	2.38E-02	3.52E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	3.85E-01	1.00E+00	8.02E-01
7.00E+07	1.00E+00	5.82E-01	9.46E-01	6.92E-01	1.00E+00	6.27E-03	1.68E-02	2.26E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	2.88E-01	1.00E+00	6.98E-01
1.00E+08	1.00E+00	5.19E-01	9.21E-01	5.95E-01	1.00E+00		1.51E-02	1.75E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	2.61E-01	1.00E+00	6.02E-01
2.00E+08	1.00E+00	2.36E-01	8.20E-01	3.15E-01	1.00E+00		1.96E-03	4.09E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.11E-02	1.00E+00	2.86E-01
3.00E+08	1.00E+00	1.26E-01	7.09E-01	1.83E-01	9.99E-01		1.11E-03	2.17E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	2.87E-02	1.00E+00	1.41E-01
5.00E+08	1.00E+00	4.06E-02	5.15E-01	6.86E-02	9.94E-01			2.40E-03	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.97E-01	9.97E-01		1.00E+00	4.25E-02
7.00E+08	1.00E+00	1.95E-02	3.48E-01	3.40E-02	9.86E-01				9.99E-01	9.97E-01	1.00E+00	1.00E+00	9.87E-01	9.87E-01		9.98E-01	1.31E-02
1.00E+09	1.00E+00	1.69E-02	2.13E-01	2.89E-02	9.68E-01				9.98E-01	9.94E-01	1.00E+00	9.98E-01	9.70E-01	9.70E-01		9.96E-01	1.11E-02
2.00E+09	9.94E-01	2.11E-04	8.97E-02	5.83E-04	8.86E-01				9.90E-01	9.46E-01	9.99E-01	9.88E-01	8.00E-01	7.96E-01		9.71E-01	
3.00E+09	9.73E-01	1.10E-04	5.43E-02	3.21E-04	7.60E-01				9.42E-01	8.21E-01	9.94E-01	9.52E-01	5.43E-01	5.43E-01		9.06E-01	
5.00E+09	8.39E-01		9.79E-03		5.08E-01				6.77E-01	4.94E-01	8.93E-01	7.57E-01	2.88E-01	2.88E-01		6.90E-01	
7.00E+09	6.34E-01		6.34E-03		3.61E-01				4.82E-01	3.41E-01	6.91E-01	5.59E-01	1.53E-01	1.55E-01		4.94E-01	
1.00E+10	4.40E-01				2.28E-01				3.17E-01	2.00E-01	4.70E-01	3.54E-01	5.54E-02	5.55E-02		3.14E-01	
2.00E+10	1.12E-01				5.44E-02				2.49E-02	1.42E-02	1.02E-01	8.50E-02				6.92E-02	
3.00E+10	2.86E-02				1.78E-02				5.79E-04	1.26E-03	1.33E-02	3.29E-02				1.79E-02	
5.00E+10	2.64E-03				2.70E-03					8.65E-06		2.02E-03				1.13E-03	
7.00E+10																	
1.00E+11																	
2.00E+11																	
3.00E+11																	
5.00E+11																	
7.00E+11																	
1.00E+12																	
Mean	1.12E+10	1.59E+08	8.28E+08	2.04E+08	7.39E+09	1.92E+07	1.52E+07	5.91E+07	8.31E+09	6.62E+09	1.13E+10	9.98E+09	4.22E+09	4.22E+09	7.07E+07	8.99E+09	1.76E+08

TABLE 7 (continued)

Economic Cost ($)	Probability of Exceedence, Farm-Dependent Interdiction Cost (2016 Dollars, Assuming 3% Inflation Rate)																
	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+06	1.00E+00	4.58E-01	7.71E-01	5.25E-01	1.00E+00	1.82E-01	3.66E-02	4.44E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	3.60E-01	1.00E+00	5.22E-01
2.00E+06	1.00E+00	4.02E-01	6.44E-01	4.61E-01	1.00E+00	8.26E-03	6.93E-03	2.88E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.69E-01	1.00E+00	4.61E-01
3.00E+06	1.00E+00	3.19E-01	5.29E-01	3.78E-01	9.99E-01	1.40E-03	1.03E-03	8.79E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.94E-01	9.94E-01	7.57E-02	1.00E+00	3.57E-01
5.00E+06	1.00E+00	1.69E-01	4.75E-01	2.51E-01	9.87E-01			1.09E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.50E-01	9.51E-01	7.46E-03	1.00E+00	2.18E-01
7.00E+06	1.00E+00	9.54E-02	4.04E-01	1.50E-01	9.80E-01			3.12E-03	1.00E+00	9.78E-01	1.00E+00	1.00E+00	8.75E-01	8.77E-01	2.41E-03	1.00E+00	1.19E-01
1.00E+07	1.00E+00	5.08E-02	3.16E-01	6.95E-02	9.49E-01				9.96E-01	9.37E-01	9.99E-01	9.80E-01	7.18E-01	7.18E-01		9.94E-01	4.29E-02
2.00E+07	9.48E-01	1.94E-04	1.32E-01	1.66E-03	7.61E-01				8.29E-01	6.97E-01	9.32E-01	8.89E-01	5.28E-01	5.28E-01		8.33E-01	
3.00E+07	7.83E-01		1.30E-02		5.11E-01				6.06E-01	5.41E-01	7.43E-01	6.63E-01	4.79E-01	4.82E-01		6.36E-01	
5.00E+07	5.32E-01				2.42E-01				4.50E-01	3.30E-01	5.22E-01	5.19E-01	1.89E-01	1.90E-01		4.81E-01	
7.00E+07	3.70E-01				9.01E-02				2.79E-01	1.22E-01	3.74E-01	2.90E-01	6.02E-02	6.02E-02		2.76E-01	
1.00E+08	1.50E-01				1.13E-02				7.26E-02	1.28E-02	1.28E-01	6.42E-02	4.07E-03	4.07E-03		7.75E-02	
2.00E+08																	
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3.00E+11																	
5.00E+11																	
7.00E+11																	
1.00E+12																	
Mean	8.11E+07	2.44E+06	8.12E+06	3.13E+06	3.67E+07	4.97E+05	3.17E+05	1.22E+06	5.00E+07	3.91E+07	5.85E+07	5.23E+07	2.96E+07	2.97E+07	9.25E+05	5.13E+07	2.78E+06

TABLE 7 (continued)

Economic Cost ($)	Probability of Exceedence, Farm-Dependent Interdiction Cost (2016 Dollars, Assuming 7% Inflation Rate)																
	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+06	1.00E+00	5.41E-01	9.28E-01	6.36E-01	1.00E+00	4.35E-01	2.53E-01	5.28E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	4.50E-01	1.00E+00	5.90E-01
2.00E+06	1.00E+00	4.45E-01	7.60E-01	5.19E-01	1.00E+00	1.34E-01	3.45E-02	4.25E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	3.36E-01	1.00E+00	5.19E-01
3.00E+06	1.00E+00	4.16E-01	7.04E-01	4.78E-01	1.00E+00	2.10E-02	2.28E-02	3.62E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	2.17E-01	1.00E+00	4.85E-01
5.00E+06	1.00E+00	3.55E-01	5.36E-01	3.94E-01	9.99E-01	2.76E-03	3.27E-03	1.14E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.96E-01	9.96E-01	9.31E-02	1.00E+00	3.82E-01
7.00E+06	1.00E+00	1.97E-01	5.13E-01	3.17E-01	9.89E-01			5.69E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.81E-01	9.81E-01	1.83E-02	1.00E+00	3.03E-01
1.00E+07	1.00E+00	1.55E-01	4.56E-01	2.31E-01	9.86E-01			8.64E-03	1.00E+00	9.98E-01	1.00E+00	1.00E+00	9.33E-01	9.33E-01	6.49E-03	1.00E+00	2.00E-01
2.00E+07	1.00E+00	4.33E-02	2.94E-01	5.63E-02	9.41E-01				9.92E-01	9.26E-01	9.96E-01	9.74E-01	6.75E-01	6.75E-01		9.89E-01	3.30E-02
3.00E+07	9.81E-01	1.16E-03	2.23E-01	8.18E-03	8.76E-01				9.29E-01	8.12E-01	9.69E-01	9.33E-01	5.43E-01	5.43E-01		9.17E-01	3.85E-04
5.00E+07	8.48E-01		3.19E-02		5.76E-01				6.52E-01	5.62E-01	8.08E-01	7.25E-01	5.05E-01	5.06E-01		6.74E-01	
7.00E+07	6.28E-01		6.02E-05		3.95E-01				5.37E-01	4.71E-01	6.30E-01	5.75E-01	3.72E-01	3.76E-01		5.57E-01	
1.00E+08	4.92E-01				1.92E-01				4.15E-01	2.71E-01	4.91E-01	4.74E-01	1.38E-01	1.38E-01		4.32E-01	
2.00E+08	1.13E-01				4.12E-03				3.46E-02	4.64E-03	7.38E-02	3.23E-02	1.22E-04	1.22E-04		4.73E-02	
3.00E+08	1.17E-04																
5.00E+08																	
7.00E+08																	
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2.00E+11																	
3.00E+11																	
5.00E+11																	
7.00E+11																	
1.00E+12																	
Mean	1.12E+08	4.49E+06	1.49E+07	5.76E+06	6.75E+07	9.15E+05	5.83E+05	2.24E+06	9.20E+07	7.20E+07	1.08E+08	9.61E+07	5.44E+07	5.46E+07	1.70E+06	9.43E+07	5.12E+06

TABLE 7 (continued)

Economic Cost ($)	Probability of Exceedence, Population-Dependent Condemnation Cost (2016 Dollars, Assuming 3% Inflation Rate)																
	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+06	1.00E+00	2.39E-01	6.99E-01	3.05E-01	9.98E-01	8.70E-03	2.56E-02	2.24E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.91E-01	9.92E-01	8.85E-02	1.00E+00	2.31E-01
2.00E+06	1.00E+00	1.84E-01	6.48E-01	2.39E-01	9.96E-01	3.90E-03	1.86E-02	1.45E-02	9.98E-01	9.99E-01	1.00E+00	9.99E-01	9.76E-01	9.76E-01	4.71E-02	9.99E-01	1.62E-01
3.00E+06	1.00E+00	1.48E-01	5.86E-01	1.91E-01	9.95E-01	3.90E-03	1.86E-02	1.45E-02	9.96E-01	9.98E-01	1.00E+00	9.99E-01	9.69E-01	9.69E-01	4.69E-02	9.99E-01	1.28E-01
5.00E+06	9.99E-01	1.46E-01	5.41E-01	1.84E-01	9.95E-01	3.90E-03	1.86E-02	1.45E-02	9.95E-01	9.98E-01	1.00E+00	9.98E-01	9.60E-01	9.60E-01	4.69E-02	9.96E-01	1.27E-01
7.00E+06	9.99E-01	1.46E-01	5.25E-01	1.83E-01	9.94E-01	3.90E-03	1.86E-02	1.45E-02	9.95E-01	9.98E-01	1.00E+00	9.98E-01	9.56E-01	9.56E-01	4.69E-02	9.96E-01	1.27E-01
1.00E+07	9.99E-01	4.82E-02	4.11E-01	7.58E-02	9.94E-01				9.95E-01	9.98E-01	1.00E+00	9.98E-01	9.49E-01	9.49E-01		9.96E-01	1.01E-02
2.00E+07	9.98E-01	3.20E-02	2.75E-01	4.53E-02	9.89E-01				9.89E-01	9.94E-01	9.99E-01	9.96E-01	8.77E-01	8.77E-01		9.93E-01	7.37E-03
3.00E+07	9.98E-01	3.17E-02	2.58E-01	4.50E-02	9.88E-01				9.88E-01	9.91E-01	9.99E-01	9.93E-01	8.52E-01	8.53E-01		9.92E-01	7.25E-03
5.00E+07	9.97E-01	2.89E-02	1.31E-01	3.95E-02	9.78E-01				9.80E-01	9.79E-01	9.98E-01	9.87E-01	7.33E-01	7.35E-01		9.83E-01	7.25E-03
7.00E+07	9.93E-01	2.86E-02	1.03E-01	3.88E-02	9.47E-01				9.53E-01	9.38E-01	9.90E-01	9.68E-01	6.55E-01	6.56E-01		9.58E-01	7.25E-03
1.00E+08	9.86E-01	8.70E-04	7.47E-02	1.74E-03	9.32E-01				9.29E-01	9.12E-01	9.83E-01	9.54E-01	5.09E-01	5.10E-01		9.35E-01	
2.00E+08	9.62E-01				8.94E-01				8.39E-01	8.21E-01	9.46E-01	9.11E-01	2.17E-01	2.18E-01		8.80E-01	
3.00E+08	9.26E-01				8.20E-01				7.47E-01	7.23E-01	8.95E-01	8.59E-01	9.60E-02	9.70E-02		8.00E-01	
5.00E+08	8.76E-01				7.69E-01				6.30E-01	6.06E-01	8.23E-01	7.84E-01	5.86E-02	5.92E-02		7.08E-01	
7.00E+08	8.05E-01				6.20E-01				4.38E-01	3.61E-01	7.19E-01	6.85E-01	1.90E-02	1.92E-02		5.80E-01	
1.00E+09	6.67E-01				5.35E-01				2.88E-01	2.37E-01	5.39E-01	5.92E-01	1.33E-02	1.34E-02		4.66E-01	
2.00E+09	3.49E-01				2.62E-01				1.06E-01	9.90E-02	2.17E-01	3.05E-01	7.55E-03	7.63E-03		2.24E-01	
3.00E+09	1.73E-01				1.30E-01				2.33E-02	2.27E-02	7.70E-02	1.49E-01				9.91E-02	
5.00E+09	9.30E-02				9.02E-02				6.94E-03	1.61E-02	1.55E-02	1.14E-01				7.83E-02	
7.00E+09	4.09E-02				2.94E-02				2.78E-03	2.61E-03	5.95E-03	4.30E-02				2.49E-02	
1.00E+10	8.20E-03				8.51E-03					1.70E-04	2.17E-06	1.69E-02				6.54E-03	
2.00E+10	1.69E-03				1.73E-03					6.09E-05		4.26E-03				1.66E-03	
3.00E+10	2.82E-05				3.01E-06							5.47E-04				2.08E-04	
5.00E+10																	
7.00E+10																	
1.00E+11																	
2.00E+11																	
3.00E+11																	
5.00E+11																	
7.00E+11																	
1.00E+12																	
Mean	2.10E+09	3.60E+06	2.16E+07	4.85E+06	1.74E+09	5.10E+04	1.67E+05	1.36E+05	8.83E+08	8.47E+08	1.39E+09	2.01E+09	1.63E+08	1.63E+08	5.19E+05	1.54E+09	1.79E+06

TABLE 7 (continued)

Economic Cost ($)	Probability of Exceedence, Population-Dependent Condemnation Cost (2016 Dollars, Assuming 7% Inflation Rate)																
	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+06	1.00E+00	3.24E-01	7.27E-01	3.84E-01	9.98E-01	2.07E-02	3.61E-02	3.29E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.98E-01	9.98E-01	1.67E-01	1.00E+00	3.14E-01
2.00E+06	1.00E+00	2.34E-01	6.68E-01	2.95E-01	9.97E-01	8.70E-03	2.56E-02	2.23E-02	9.99E-01	1.00E+00	1.00E+00	1.00E+00	9.88E-01	9.88E-01	8.84E-02	1.00E+00	2.22E-01
3.00E+06	1.00E+00	1.92E-01	6.52E-01	2.48E-01	9.96E-01	3.90E-03	1.86E-02	1.45E-02	9.99E-01	9.99E-01	1.00E+00	9.99E-01	9.77E-01	9.77E-01	4.71E-02	1.00E+00	1.72E-01
5.00E+06	1.00E+00	1.71E-01	5.97E-01	2.16E-01	9.95E-01	3.90E-03	1.86E-02	1.45E-02	9.96E-01	9.98E-01	1.00E+00	9.99E-01	9.71E-01	9.71E-01	4.69E-02	9.99E-01	1.32E-01
7.00E+06	9.99E-01	1.47E-01	5.80E-01	1.86E-01	9.95E-01	3.90E-03	1.86E-02	1.45E-02	9.95E-01	9.98E-01	1.00E+00	9.99E-01	9.64E-01	9.65E-01	4.69E-02	9.98E-01	1.27E-01
1.00E+07	9.99E-01	1.46E-01	5.40E-01	1.83E-01	9.94E-01	3.90E-03	1.86E-02	1.45E-02	9.95E-01	9.98E-01	1.00E+00	9.98E-01	9.58E-01	9.58E-01	4.69E-02	9.96E-01	1.27E-01
2.00E+07	9.99E-01	4.57E-02	3.83E-01	6.61E-02	9.94E-01				9.95E-01	9.98E-01	1.00E+00	9.98E-01	9.46E-01	9.46E-01		9.96E-01	9.54E-03
3.00E+07	9.99E-01	3.23E-02	2.81E-01	4.66E-02	9.91E-01				9.95E-01	9.97E-01	9.99E-01	9.98E-01	9.14E-01	9.14E-01		9.95E-01	7.37E-03
5.00E+07	9.98E-01	3.17E-02	2.73E-01	4.50E-02	9.89E-01				9.88E-01	9.91E-01	9.99E-01	9.93E-01	8.63E-01	8.64E-01		9.93E-01	7.25E-03
7.00E+07	9.98E-01	2.89E-02	1.98E-01	3.95E-02	9.84E-01				9.85E-01	9.85E-01	9.99E-01	9.90E-01	7.97E-01	7.98E-01		9.87E-01	7.25E-03
1.00E+08	9.97E-01	2.89E-02	1.31E-01	3.95E-02	9.73E-01				9.76E-01	9.74E-01	9.97E-01	9.85E-01	7.05E-01	7.07E-01		9.79E-01	7.25E-03
2.00E+08	9.85E-01	8.70E-04	7.32E-02	1.74E-03	9.25E-01				9.19E-01	9.01E-01	9.81E-01	9.52E-01	4.78E-01	4.79E-01		9.31E-01	
3.00E+08	9.72E-01		6.35E-05		9.03E-01				8.69E-01	8.54E-01	9.58E-01	9.26E-01	3.18E-01	3.19E-01		8.97E-01	
5.00E+08	9.40E-01				8.47E-01				7.79E-01	7.65E-01	9.13E-01	8.70E-01	1.30E-01	1.31E-01		8.14E-01	
7.00E+08	9.04E-01				7.89E-01				6.69E-01	6.47E-01	8.62E-01	8.10E-01	6.73E-02	6.68E-02		7.51E-01	
1.00E+09	8.65E-01				7.46E-01				6.05E-01	5.72E-01	8.11E-01	7.68E-01	5.31E-02	5.38E-02		6.91E-01	
2.00E+09	6.46E-01				5.13E-01				2.71E-01	2.28E-01	5.01E-01	5.79E-01	1.33E-02	1.34E-02		4.56E-01	
3.00E+09	4.37E-01				3.41E-01				1.41E-01	1.25E-01	2.95E-01	3.66E-01	7.55E-03	7.63E-03		2.91E-01	
5.00E+09	2.10E-01				1.44E-01				3.57E-02	2.71E-02	1.07E-01	1.63E-01				1.07E-01	
7.00E+09	1.18E-01				1.05E-01				8.99E-03	1.88E-02	2.66E-02	1.32E-01				8.83E-02	
1.00E+10	8.70E-02				8.77E-02				6.94E-03	1.61E-02	1.50E-02	1.14E-01				7.81E-02	
2.00E+10	7.23E-03				7.10E-03					1.02E-04		1.08E-02				4.42E-03	
3.00E+10	4.58E-03				4.36E-03					6.40E-05		4.51E-03				1.76E-03	
5.00E+10	2.82E-05				6.02E-06							5.47E-04				2.08E-04	
7.00E+10																	
1.00E+11																	
2.00E+11																	
3.00E+11																	
5.00E+11																	
7.00E+11																	
1.00E+12																	
Mean	3.86E+09	6.63E+06	3.98E+07	8.92E+06	3.20E+09	9.38E+04	3.07E+05	2.50E+05	1.62E+09	1.56E+09	2.55E+09	3.70E+09	2.99E+08	3.00E+08	9.55E+05	2.83E+09	3.29E+06

TABLE 7 (continued)

Economic Cost ($)	Probability of Exceedence, Farm-Dependent Condemnation Cost (2016 Dollars, Assuming 3% Inflation Rate)																
	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+06	9.97E-01		7.88E-05		9.85E-01				9.80E-01	9.83E-01	1.00E+00	9.86E-01	6.35E-01	6.34E-01		9.78E-01	
2.00E+06	9.84E-01				9.30E-01				9.25E-01	9.09E-01	9.94E-01	9.50E-01	1.74E-01	1.66E-01		9.17E-01	
3.00E+06	9.63E-01				8.78E-01				8.34E-01	8.15E-01	9.87E-01	8.92E-01	9.87E-02	9.13E-02		8.51E-01	
5.00E+06	8.68E-01				6.45E-01				5.13E-01	3.41E-01	9.35E-01	7.39E-01	1.08E-03	7.62E-04		6.25E-01	
7.00E+06	7.38E-01				5.72E-01				2.74E-01	1.86E-01	8.60E-01	6.60E-01				4.84E-01	
1.00E+07	5.47E-01				4.93E-01				7.25E-02	1.21E-01	7.46E-01	6.16E-01				4.47E-01	
2.00E+07	1.68E-01				6.46E-02				1.70E-03	6.15E-03	3.69E-01	1.06E-01				4.95E-02	
3.00E+07	4.18E-02				4.19E-02					3.64E-03	1.48E-01	8.42E-02				3.33E-02	
5.00E+07	1.28E-02				1.07E-02						5.41E-02	1.92E-02				5.87E-03	
7.00E+07	2.31E-03				7.66E-04						1.13E-02	3.17E-03				2.71E-04	
1.00E+08	2.48E-04				2.30E-04						2.80E-04						
2.00E+08																	
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7.00E+11																	
1.00E+12																	
Mean	1.38E+07	3.33E+04	1.99E+05	4.22E+04	1.15E+07	1.33E+03	2.02E+03	4.16E+04	5.89E+06	5.71E+06	2.00E+07	1.42E+07	1.44E+06	1.42E+06	1.02E+04	1.05E+07	3.61E+04

TABLE 7 (continued)

Economic Cost ($)	Probability of Exceedence, Farm-Dependent Condemnation Cost (2016 Dollars, Assuming 7% Inflation Rate)																
	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+06	9.99E-01		6.40E-02		9.93E-01				9.93E-01	9.95E-01	1.00E+00	9.95E-01	8.52E-01	8.52E-01		9.91E-01	
2.00E+06	9.97E-01				9.83E-01				9.79E-01	9.80E-01	1.00E+00	9.83E-01	5.95E-01	5.94E-01		9.76E-01	
3.00E+06	9.91E-01				9.60E-01				9.55E-01	9.52E-01	9.97E-01	9.66E-01	2.90E-01	2.87E-01		9.52E-01	
5.00E+06	9.71E-01				8.89E-01				8.63E-01	8.35E-01	9.89E-01	9.09E-01	1.01E-01	9.24E-02		8.70E-01	
7.00E+06	9.33E-01				7.88E-01				7.50E-01	6.77E-01	9.76E-01	8.47E-01	6.47E-02	5.89E-02		7.89E-01	
1.00E+07	8.37E-01				6.14E-01				4.23E-01	2.48E-01	9.16E-01	7.03E-01	1.35E-04	1.49E-04		5.64E-01	
2.00E+07	5.24E-01				4.89E-01				6.15E-02	1.18E-01	7.31E-01	5.99E-01				4.37E-01	
3.00E+07	4.07E-01				2.58E-01				1.47E-02	4.93E-02	6.23E-01	3.86E-01				2.40E-01	
5.00E+07	4.31E-02				4.37E-02					3.74E-03	1.55E-01	8.83E-02				3.56E-02	
7.00E+07	3.20E-02				2.60E-02					1.01E-03	1.15E-01	3.55E-02				1.41E-02	
1.00E+08	7.17E-03				6.46E-03						3.64E-02	1.70E-02				4.64E-03	
2.00E+08					7.85E-06						2.08E-04						
3.00E+08																	
5.00E+08																	
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3.00E+11																	
5.00E+11																	
7.00E+11																	
1.00E+12																	
Mean	2.53E+07	6.12E+04	3.66E+05	7.76E+04	2.12E+07	2.45E+03	3.72E+03	7.66E+04	1.05E+07	1.05E+07	3.68E+07	2.62E+07	2.65E+06	2.61E+06	1.88E+04	1.94E+07	6.64E+04

TABLE 7 (continued)

Economic	Probability of Exceedence, Emergency Phase Cost (2016 Dollars, Assuming 3% Inflation Rate)																
Cost ($)	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+06	1.00E+00	1.03E-01	1.20E-01	1.11E-02	9.23E-01	8.70E-04		6.33E-02	9.88E-01	9.61E-01	1.00E+00	1.00E+00	8.96E-01	8.89E-01	1.47E-02	9.90E-01	1.10E-01
2.00E+06	9.97E-01	6.68E-03	1.34E-03		8.70E-01			3.71E-04	9.64E-01	9.05E-01	9.99E-01	9.98E-01	7.80E-01	7.72E-01		9.74E-01	4.46E-04
3.00E+06	9.92E-01	4.95E-03			8.11E-01				9.36E-01	8.51E-01	9.99E-01	9.97E-01	6.55E-01	6.45E-01		9.50E-01	
5.00E+06	9.80E-01	4.00E-03			7.28E-01				8.68E-01	7.77E-01	9.97E-01	9.91E-01	4.98E-01	4.89E-01		9.06E-01	
7.00E+06	9.55E-01	8.56E-04			5.85E-01				7.58E-01	6.09E-01	9.88E-01	9.73E-01	2.93E-01	2.83E-01		8.26E-01	
1.00E+07	9.13E-01	6.71E-04			5.00E-01				6.35E-01	4.88E-01	9.72E-01	9.47E-01	1.68E-01	1.62E-01		7.32E-01	
2.00E+07	6.40E-01				2.14E-01				3.20E-01	2.30E-01	8.80E-01	7.46E-01	5.14E-02	4.95E-02		4.04E-01	
3.00E+07	3.87E-01				1.08E-01				1.44E-01	1.02E-01	7.49E-01	5.20E-01	2.47E-03	2.10E-03		1.99E-01	
5.00E+07	2.11E-01				6.81E-02				8.30E-02	6.35E-02	5.31E-01	2.78E-01	4.22E-04	4.22E-04		1.08E-01	
7.00E+07	9.84E-02				1.35E-02				2.04E-02	1.07E-02	3.58E-01	1.63E-01				3.60E-02	
1.00E+08	4.00E-02				4.55E-03				5.13E-03	3.27E-03	2.19E-01	9.60E-02				1.09E-02	
2.00E+08	3.18E-03								4.28E-04		8.58E-02	2.01E-02				1.33E-03	
3.00E+08	1.20E-03								2.00E-04		3.07E-02	8.47E-03				2.00E-04	
5.00E+08																	
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7.00E+11																	
1.00E+12																	
Mean	3.54E+07	2.97E+05	3.35E+05	8.64E+04	1.49E+07	1.36E+04	2.63E+04	2.36E+05	1.88E+07	1.49E+07	7.75E+07	4.72E+07	6.20E+06	6.07E+06	8.79E+04	2.28E+07	3.09E+05

TABLE 7 (continued)

Economic	Probability of Exceedence, Emergency Phase Cost (2016 Dollars, Assuming 7% Inflation Rate)																
Cost ($)	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+06	1.00E+00	2.02E-01	2.67E-01	6.46E-02	9.63E-01	4.18E-03	1.86E-02	1.75E-01	9.98E-01	9.85E-01	1.00E+00	1.00E+00	9.59E-01	9.58E-01	6.20E-02	9.97E-01	2.46E-01
2.00E+06	9.99E-01	7.50E-02	9.22E-02	8.70E-04	9.18E-01			3.00E-02	9.85E-01	9.57E-01	1.00E+00	1.00E+00	8.81E-01	8.77E-01	5.06E-03	9.89E-01	7.78E-02
3.00E+06	9.99E-01	6.69E-03	3.82E-03		8.86E-01			3.95E-03	9.76E-01	9.26E-01	1.00E+00	9.98E-01	8.27E-01	8.18E-01		9.82E-01	1.72E-03
5.00E+06	9.93E-01	4.95E-03			8.22E-01				9.48E-01	8.68E-01	9.99E-01	9.98E-01	6.93E-01	6.84E-01		9.58E-01	
7.00E+06	9.86E-01	4.84E-03			7.61E-01				8.99E-01	8.14E-01	9.97E-01	9.95E-01	5.68E-01	5.57E-01		9.28E-01	
1.00E+07	9.75E-01	1.37E-03			6.92E-01				8.52E-01	7.42E-01	9.97E-01	9.89E-01	4.63E-01	4.55E-01		8.96E-01	
2.00E+07	8.94E-01	5.42E-04			4.44E-01				5.95E-01	4.51E-01	9.65E-01	9.30E-01	1.45E-01	1.40E-01		7.02E-01	
3.00E+07	7.41E-01	5.42E-04			3.01E-01				4.26E-01	2.95E-01	9.21E-01	8.32E-01	7.64E-02	7.25E-02		5.10E-01	
5.00E+07	4.45E-01				1.15E-01				1.65E-01	1.13E-01	7.86E-01	5.80E-01	6.31E-03	5.53E-03		2.35E-01	
7.00E+07	2.80E-01				9.45E-02				1.05E-01	8.53E-02	6.53E-01	4.01E-01	5.55E-04	5.55E-04		1.39E-01	
1.00E+08	1.92E-01				6.11E-02				7.57E-02	5.81E-02	4.76E-01	2.48E-01	4.22E-04	4.22E-04		1.01E-01	
2.00E+08	3.32E-02				4.33E-03				4.81E-03	3.08E-03	1.93E-01	7.88E-02				8.89E-03	
3.00E+08	1.54E-02				2.15E-03				1.75E-03	1.47E-03	1.09E-01	4.18E-02				3.83E-03	
5.00E+08	1.20E-03								2.00E-04		3.90E-02	8.70E-03				2.00E-04	
7.00E+08											7.16E-03	1.01E-03					
1.00E+09																	
2.00E+09																	
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7.00E+11																	
1.00E+12																	
Mean	6.52E+07	5.46E+05	6.16E+05	1.59E+05	2.74E+07	2.49E+04	4.85E+04	4.35E+05	3.46E+07	2.74E+07	1.43E+08	8.69E+07	1.14E+07	1.12E+07	1.62E+05	4.19E+07	5.68E+05

TABLE 7 (continued)

Economic Cost ($)	Probability of Exceedence, Milk Disposal Cost (2016 Dollars, Assuming 3% Inflation Rate)																
	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+06	3.16E-01		6.88E-04		1.23E-01				2.58E-01	1.56E-01	3.04E-01	2.24E-01	1.05E-01	1.07E-01		2.58E-01	
2.00E+06	5.28E-02				3.49E-03				2.27E-02	1.00E-02	4.63E-02	1.37E-02	1.22E-04	1.60E-04		2.30E-02	
3.00E+06																	
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1.00E+12																	
Mean	8.20E+05	1.97E+04	1.26E+05	6.73E+04	4.88E+05	6.30E+03	4.22E+03	8.75E+03	6.96E+05	5.26E+05	7.91E+05	6.33E+05	4.04E+05	4.06E+05	1.36E+04	6.84E+05	3.49E+04

TABLE 7 (continued)

Economic Cost ($)	Probability of Exceedence, Milk Disposal Cost (2016 Dollars, Assuming 7% Inflation Rate)																
	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+06	5.46E-01		4.80E-02	1.37E-03	2.98E-01				4.64E-01	3.50E-01	5.35E-01	4.47E-01	2.74E-01	2.76E-01		4.72E-01	
2.00E+06	2.88E-01		6.58E-04		1.09E-01				2.35E-01	1.29E-01	2.73E-01	1.93E-01	8.59E-02	8.73E-02		2.32E-01	
3.00E+06	1.38E-01				2.83E-02				8.47E-02	3.30E-02	1.35E-01	6.03E-02	1.66E-02	1.50E-02		9.09E-02	
5.00E+06	2.83E-04										1.65E-04						
7.00E+06																	
1.00E+07																	
2.00E+07																	
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7.00E+11																	
1.00E+12																	
Mean	1.51E+06	3.62E+04	2.32E+05	1.24E+05	8.98E+05	1.16E+04	7.76E+03	1.61E+04	1.28E+06	9.67E+05	1.46E+06	1.16E+06	7.43E+05	7.47E+05	2.50E+04	1.26E+06	6.41E+04

TABLE 7 (continued)

Economic Cost ($)	Probability of Exceedence, Crop Disposal Cost (2016 Dollars, Assuming 3% Inflation Rate)																
	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+06	1.00E+00	5.09E-01	8.27E-01	5.88E-01	1.00E+00	3.78E-01	1.48E-01	5.27E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	4.34E-01	1.00E+00	5.73E-01
2.00E+06	1.00E+00	4.21E-01	7.26E-01	5.00E-01	1.00E+00	6.56E-02	3.66E-02	4.20E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	2.44E-01	1.00E+00	5.06E-01
3.00E+06	1.00E+00	3.99E-01	6.95E-01	4.67E-01	1.00E+00	3.43E-03	3.33E-02	3.68E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.98E-01	9.98E-01	1.97E-01	1.00E+00	4.68E-01
5.00E+06	1.00E+00	1.94E-01	5.06E-01	3.26E-01	1.00E+00	6.48E-05	3.44E-05	1.30E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.85E-01	9.85E-01	1.96E-02	1.00E+00	3.41E-01
7.00E+06	1.00E+00	1.81E-01	4.84E-01	2.62E-01	9.94E-01			7.19E-02	1.00E+00	9.98E-01	1.00E+00	1.00E+00	9.61E-01	9.61E-01	6.22E-03	1.00E+00	2.59E-01
1.00E+07	1.00E+00	7.04E-02	3.87E-01	1.24E-01	9.79E-01			8.03E-03	1.00E+00	9.84E-01	1.00E+00	9.99E-01	9.00E-01	9.01E-01		1.00E+00	1.40E-01
2.00E+07	9.93E-01	6.65E-03	2.29E-01	2.17E-02	8.98E-01				9.78E-01	9.14E-01	1.00E+00	9.58E-01	6.16E-01	6.16E-01		9.71E-01	1.26E-02
3.00E+07	9.48E-01		1.59E-02		6.90E-01				8.75E-01	7.12E-01	9.62E-01	8.62E-01	5.19E-01	5.19E-01		8.22E-01	
5.00E+07	6.94E-01				2.91E-01				5.54E-01	4.11E-01	6.87E-01	5.46E-01	3.09E-01	3.18E-01		5.30E-01	
7.00E+07	4.42E-01				8.31E-02				3.58E-01	1.90E-01	4.68E-01	4.11E-01	1.16E-01	1.17E-01		3.79E-01	
1.00E+08	2.06E-01				1.30E-02				1.05E-01	2.71E-02	2.03E-01	8.50E-02	1.95E-03	1.95E-03		1.34E-01	
2.00E+08																	
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5.00E+11																	
7.00E+11																	
1.00E+12																	
Mean	7.26E+07	3.21E+06	9.92E+06	4.42E+06	4.18E+07	7.52E+05	4.93E+05	2.35E+06	6.11E+07	4.76E+07	7.19E+07	6.11E+07	3.68E+07	3.69E+07	1.36E+06	6.07E+07	4.31E+06

TABLE 7 (continued)

Economic Cost ($)	Probability of Exceedence, Crop Disposal Cost (2016 Dollars, Assuming 7% Inflation Rate)																
	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+06	1.00E+00	6.07E-01	9.40E-01	7.47E-01	1.00E+00	5.04E-01	3.55E-01	5.43E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	4.94E-01	1.00E+00	6.88E-01
2.00E+06	1.00E+00	4.99E-01	7.98E-01	5.55E-01	1.00E+00	3.42E-01	9.51E-02	5.23E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	4.18E-01	1.00E+00	5.44E-01
3.00E+06	1.00E+00	4.38E-01	7.33E-01	5.21E-01	1.00E+00	1.58E-01	3.90E-02	4.74E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	3.16E-01	1.00E+00	5.20E-01
5.00E+06	1.00E+00	4.08E-01	6.97E-01	4.74E-01	1.00E+00	7.34E-03	3.33E-02	3.75E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.99E-01	9.99E-01	2.00E-01	1.00E+00	4.76E-01
7.00E+06	1.00E+00	3.46E-01	5.65E-01	4.49E-01	1.00E+00	1.13E-03	1.25E-03	3.10E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.95E-01	9.95E-01	1.38E-01	1.00E+00	4.45E-01
1.00E+07	1.00E+00	1.91E-01	5.00E-01	2.84E-01	9.99E-01	1.22E-06	9.80E-07	9.05E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.78E-01	9.78E-01	1.26E-02	1.00E+00	3.01E-01
2.00E+07	1.00E+00	6.71E-02	3.68E-01	1.03E-01	9.73E-01			6.46E-03	1.00E+00	9.79E-01	1.00E+00	9.99E-01	8.82E-01	8.83E-01		1.00E+00	1.23E-01
3.00E+07	9.97E-01	1.23E-02	2.70E-01	3.33E-02	9.34E-01			2.70E-04	9.94E-01	9.38E-01	1.00E+00	9.81E-01	7.24E-01	7.24E-01		9.84E-01	2.29E-02
5.00E+07	9.71E-01		4.63E-02		7.60E-01				9.07E-01	7.94E-01	9.70E-01	9.13E-01	5.32E-01	5.32E-01		8.85E-01	2.28E-04
7.00E+07	8.81E-01		5.95E-04		4.85E-01				7.57E-01	5.62E-01	8.95E-01	6.93E-01	4.60E-01	4.62E-01		6.62E-01	
1.00E+08	6.38E-01				2.56E-01				5.10E-01	3.77E-01	6.23E-01	5.22E-01	2.45E-01	2.49E-01		5.03E-01	
2.00E+08	1.33E-01				1.29E-02				4.90E-02	1.70E-03	1.39E-01	4.85E-02	6.28E-04	6.28E-04		9.87E-02	
3.00E+08	6.77E-03										5.51E-03						
5.00E+08																	
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Mean	1.33E+08	5.90E+06	1.83E+07	8.14E+06	7.70E+07	1.38E+06	9.07E+05	4.32E+06	1.12E+08	8.76E+07	1.32E+08	1.12E+08	6.76E+07	6.79E+07	2.50E+06	1.12E+08	7.92E+06

TABLE 7 (continued)

Area	Probability of Exceedence, Farm Decontamination (Hectares)																
Hectares	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+03	1.00E+00	1.30E-01	8.71E-01	2.39E-01	1.00E+00			5.42E-03	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00		1.00E+00	2.16E-01
2.00E+03	1.00E+00	1.16E-01	7.71E-01	1.80E-01	1.00E+00				1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00		1.00E+00	8.07E-02
3.00E+03	1.00E+00	2.99E-03	4.91E-01	1.73E-02	1.00E+00				1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00		1.00E+00	1.11E-02
5.00E+03	1.00E+00	1.41E-03	3.55E-01	4.42E-03	9.97E-01				1.00E+00	9.99E-01	1.00E+00	1.00E+00	9.86E-01	9.86E-01		1.00E+00	
7.00E+03	1.00E+00	2.60E-04	1.75E-01	1.18E-03	9.87E-01				1.00E+00	9.93E-01	1.00E+00	1.00E+00	9.58E-01	9.58E-01		1.00E+00	
1.00E+04	1.00E+00		7.07E-02		9.75E-01				9.99E-01	9.84E-01	1.00E+00	1.00E+00	8.84E-01	8.85E-01		9.95E-01	
2.00E+04	9.85E-01		3.50E-03		7.50E-01				9.74E-01	8.64E-01	9.97E-01	9.76E-01	5.67E-01	5.63E-01		9.34E-01	
3.00E+04	8.92E-01				4.65E-01				7.96E-01	5.17E-01	9.47E-01	8.80E-01	1.37E-01	1.28E-01		6.99E-01	
5.00E+04	4.02E-01				6.06E-02				1.59E-01	3.45E-02	4.50E-01	2.38E-01	1.16E-03	1.16E-03		1.78E-01	
7.00E+04	7.43E-02				1.01E-02				3.45E-03	9.96E-05	6.75E-02	4.39E-02				2.34E-02	
1.00E+05	9.82E-03										4.50E-03						
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5.00E+08																	
7.00E+08																	
1.00E+09																	
Mean	4.76E+04	7.69E+02	4.28E+03	1.02E+03	2.95E+04	1.47E+02	1.06E+02	3.46E+02	3.91E+04	3.07E+04	4.96E+04	4.25E+04	2.13E+04	2.11E+04	3.57E+02	3.80E+04	8.81E+02

TABLE 7 (continued)

Population Impacted	Probability of Exceedence, Population Decontamination (Individuals)																
	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+03	1.00E+00	7.77E-01	9.80E-01	8.52E-01	1.00E+00	2.34E-01	1.42E-01	5.59E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	4.87E-01	1.00E+00	8.55E-01
2.00E+03	1.00E+00	6.08E-01	9.42E-01	7.13E-01	1.00E+00	1.20E-02	1.77E-02	2.60E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	3.15E-01	1.00E+00	7.29E-01
3.00E+03	1.00E+00	5.19E-01	9.17E-01	5.88E-01	1.00E+00		1.60E-02	1.86E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	2.66E-01	1.00E+00	6.11E-01
5.00E+03	1.00E+00	2.59E-01	8.44E-01	3.79E-01	1.00E+00		4.42E-03	7.25E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.23E-01	1.00E+00	3.73E-01
7.00E+03	1.00E+00	1.93E-01	7.75E-01	2.74E-01	9.99E-01		1.96E-03	3.99E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.10E-02	1.00E+00	2.41E-01
1.00E+04	1.00E+00	1.12E-01	6.58E-01	1.65E-01	9.98E-01		1.11E-03	2.29E-02	1.00E+00	9.99E-01	1.00E+00	1.00E+00	9.99E-01	9.99E-01	3.16E-02	1.00E+00	1.34E-01
2.00E+04	1.00E+00	1.99E-02	3.62E-01	3.95E-02	9.75E-01			8.87E-04	9.99E-01	9.97E-01	1.00E+00	1.00E+00	9.85E-01	9.85E-01		9.98E-01	2.28E-02
3.00E+04	9.98E-01	1.92E-02	2.32E-01	3.30E-02	9.38E-01				9.97E-01	9.84E-01	1.00E+00	9.97E-01	9.54E-01	9.54E-01		9.92E-01	1.23E-02
5.00E+04	9.92E-01	3.28E-04	1.11E-01	1.30E-03	8.34E-01				9.83E-01	9.28E-01	9.98E-01	9.86E-01	8.19E-01	8.18E-01		9.61E-01	4.89E-04
7.00E+04	9.58E-01	2.11E-04	8.18E-02	5.83E-04	7.17E-01				9.47E-01	8.19E-01	9.87E-01	9.56E-01	6.65E-01	6.56E-01		9.07E-01	
1.00E+05	8.69E-01	1.10E-04	5.42E-02	3.25E-04	5.54E-01				8.07E-01	6.30E-01	9.38E-01	8.50E-01	4.56E-01	4.55E-01		7.76E-01	
2.00E+05	5.02E-01		6.34E-03		2.48E-01				3.95E-01	2.59E-01	5.67E-01	4.47E-01	1.56E-01	1.55E-01		3.82E-01	
3.00E+05	2.79E-01				1.17E-01				1.89E-01	1.10E-01	3.03E-01	2.22E-01	5.57E-02	5.52E-02		1.97E-01	
5.00E+05	6.64E-02				1.21E-02				2.48E-02	4.22E-03	7.82E-02	4.78E-02	1.25E-03	1.25E-03		3.71E-02	
7.00E+05	5.36E-03				1.60E-04						2.81E-03	5.07E-06				1.10E-03	
1.00E+06																	
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Mean	2.42E+05	4.94E+03	2.82E+04	6.43E+03	1.48E+05	6.11E+02	4.91E+02	1.97E+03	2.01E+05	1.57E+05	2.59E+05	2.19E+05	1.20E+05	1.19E+05	2.34E+03	2.00E+05	5.66E+03

TABLE 7 (continued)

Area	Probability of Exceedence, Farm Interdiction (Hectares)																
Hectares	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+03	1.00E+00	5.15E-01	9.66E-01	6.43E-01	1.00E+00	2.07E-01	3.97E-02	4.96E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	3.53E-01	1.00E+00	6.20E-01
2.00E+03	1.00E+00	4.64E-01	8.99E-01	5.54E-01	1.00E+00	4.14E-03	3.33E-02	3.72E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.98E-01	1.00E+00	5.17E-01
3.00E+03	1.00E+00	2.82E-01	7.54E-01	4.24E-01	1.00E+00	2.37E-04	9.95E-05	2.54E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	8.11E-02	1.00E+00	4.30E-01
5.00E+03	1.00E+00	1.81E-01	6.47E-01	2.65E-01	1.00E+00			7.20E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.98E-01	9.98E-01	6.22E-03	1.00E+00	2.58E-01
7.00E+03	1.00E+00	1.03E-01	4.80E-01	1.66E-01	9.99E-01			1.57E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.89E-01	9.89E-01	1.79E-03	1.00E+00	1.63E-01
1.00E+04	1.00E+00	5.48E-02	3.45E-01	7.68E-02	9.89E-01			4.12E-03	9.99E-01	1.00E+00	1.00E+00	1.00E+00	9.65E-01	9.65E-01		1.00E+00	6.17E-02
2.00E+04	9.91E-01	1.33E-03	1.14E-01	6.34E-03	8.43E-01				9.91E-01	9.49E-01	9.97E-01	9.88E-01	8.21E-01	8.22E-01		9.86E-01	1.58E-03
3.00E+04	9.38E-01		4.29E-03		6.16E-01				9.10E-01	7.66E-01	9.73E-01	9.39E-01	5.46E-01	5.46E-01		8.73E-01	
5.00E+04	6.54E-01				1.75E-01				4.80E-01	2.89E-01	6.84E-01	5.51E-01	1.70E-01	1.72E-01		4.74E-01	
7.00E+04	3.10E-01				4.65E-02				2.33E-01	1.00E-01	3.14E-01	2.40E-01	4.48E-02	4.49E-02		2.42E-01	
1.00E+05	1.15E-01				7.37E-03				3.07E-02	1.58E-03	7.62E-02	2.55E-02	2.07E-04	2.07E-04		5.22E-02	
2.00E+05																	
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7.00E+08																	
1.00E+09																	
Mean	8.31E+04	2.71E+03	9.23E+03	3.66E+03	3.64E+04	5.76E+02	3.78E+02	1.78E+03	5.43E+04	4.33E+04	6.29E+04	5.56E+04	3.50E+04	3.51E+04	1.09E+03	5.42E+04	3.47E+03

TABLE 7 (continued)

Population	Probability of Exceedence, Population Interdiction (Individuals)																
Impacted	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+03	1.00E+00	7.77E-01	9.80E-01	8.52E-01	1.00E+00	2.34E-01	1.42E-01	5.59E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	4.87E-01	1.00E+00	8.55E-01
2.00E+03	1.00E+00	6.08E-01	9.42E-01	7.13E-01	1.00E+00	1.20E-02	1.77E-02	2.60E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	3.15E-01	1.00E+00	7.29E-01
3.00E+03	1.00E+00	5.19E-01	9.17E-01	5.88E-01	1.00E+00		1.60E-02	1.86E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	2.66E-01	1.00E+00	6.11E-01
5.00E+03	1.00E+00	2.59E-01	8.44E-01	3.79E-01	1.00E+00		4.42E-03	7.25E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.23E-01	1.00E+00	3.73E-01
7.00E+03	1.00E+00	1.93E-01	7.75E-01	2.74E-01	9.99E-01		1.96E-03	3.99E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.10E-02	1.00E+00	2.41E-01
1.00E+04	1.00E+00	1.12E-01	6.58E-01	1.65E-01	9.98E-01		1.11E-03	2.29E-02	1.00E+00	9.99E-01	1.00E+00	1.00E+00	9.99E-01	9.99E-01	3.16E-02	1.00E+00	1.34E-01
2.00E+04	1.00E+00	1.99E-02	3.62E-01	3.95E-02	9.75E-01			8.87E-04	9.99E-01	9.97E-01	1.00E+00	1.00E+00	9.85E-01	9.85E-01		9.98E-01	2.28E-02
3.00E+04	9.98E-01	1.92E-02	2.32E-01	3.30E-02	9.38E-01				9.97E-01	9.84E-01	1.00E+00	9.97E-01	9.54E-01	9.54E-01		9.92E-01	1.23E-02
5.00E+04	9.92E-01	3.28E-04	1.11E-01	1.30E-03	8.34E-01				9.83E-01	9.28E-01	9.98E-01	9.86E-01	8.19E-01	8.18E-01		9.61E-01	4.89E-04
7.00E+04	9.58E-01	2.11E-04	8.18E-02	5.83E-04	7.17E-01				9.47E-01	8.19E-01	9.87E-01	9.56E-01	6.65E-01	6.56E-01		9.07E-01	
1.00E+05	8.69E-01	1.10E-04	5.42E-02	3.25E-04	5.54E-01				8.07E-01	6.30E-01	9.38E-01	8.50E-01	4.56E-01	4.55E-01		7.76E-01	
2.00E+05	5.02E-01		6.34E-03		2.48E-01				3.95E-01	2.59E-01	5.67E-01	4.47E-01	1.56E-01	1.55E-01		3.82E-01	
3.00E+05	2.79E-01				1.17E-01				1.89E-01	1.10E-01	3.03E-01	2.22E-01	5.57E-02	5.52E-02		1.97E-01	
5.00E+05	6.64E-02				1.21E-02				2.48E-02	4.22E-03	7.82E-02	4.78E-02	1.25E-03	1.25E-03		3.71E-02	
7.00E+05	5.36E-03				1.60E-04						2.81E-03	5.07E-06				1.10E-03	
1.00E+06																	
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3.00E+08																	
5.00E+08																	
7.00E+08																	
1.00E+09																	
Mean	2.42E+05	4.94E+03	2.62E+04	6.43E+03	1.48E+05	6.11E+02	4.91E+02	1.97E+03	2.01E+05	1.57E+05	2.59E+05	2.19E+05	1.20E+05	1.19E+05	2.34E+03	2.00E+05	5.66E+03

TABLE 7 (continued)

Area	Probability of Exceedence, Farm Condemnation (Hectares)																
Hectares	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+03	7.88E-01				5.87E-01				3.37E-01	1.98E-01	8.91E-01	6.69E-01				5.00E-01	
2.00E+03	4.94E-01				4.81E-01				4.24E-02	1.17E-01	7.00E-01	5.93E-01				4.31E-01	
3.00E+03	2.84E-01				1.25E-01				5.69E-03	1.53E-02	5.14E-01	1.29E-01				6.72E-02	
5.00E+03	4.00E-02				4.17E-02					3.64E-03	1.46E-01	8.30E-02				3.33E-02	
7.00E+03	1.60E-02				1.55E-02					9.29E-04	6.83E-02	3.08E-02				1.27E-02	
1.00E+04	5.31E-03				3.65E-03						2.53E-02	7.06E-03				1.63E-03	
2.00E+04											1.18E-04						
3.00E+04																	
5.00E+04																	
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5.00E+08																	
7.00E+08																	
1.00E+09																	
Mean	2.23E+03	5.40E+00	3.23E+01	6.85E+00	1.87E+03	2.16E-01	3.28E-01	6.78E+00	9.23E+02	9.26E+02	3.23E+03	2.30E+03	2.34E+02	2.30E+02	1.66E+00	1.71E+03	5.86E+00

TABLE 7 (continued)

Population	Probability of Exceedence, Population Condemnation (Individuals)																
Impacted	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+03	9.75E-01		6.35E-05		9.09E-01				8.83E-01	8.67E-01	9.63E-01	9.35E-01	3.73E-01	3.73E-01		9.11E-01	
2.00E+03	9.29E-01				8.22E-01				7.54E-01	7.30E-01	8.98E-01	8.64E-01	1.00E-01	1.01E-01		8.02E-01	
3.00E+03	8.88E-01				7.77E-01				6.48E-01	6.29E-01	8.40E-01	7.91E-01	6.01E-02	6.03E-02		7.20E-01	
5.00E+03	7.89E-01				6.09E-01				4.13E-01	3.49E-01	7.00E-01	6.67E-01	1.79E-02	1.80E-02		5.60E-01	
7.00E+03	6.63E-01				5.34E-01				2.84E-01	2.36E-01	5.29E-01	5.89E-01	1.33E-02	1.34E-02		4.65E-01	
1.00E+04	4.84E-01				3.67E-01				1.64E-01	1.40E-01	3.38E-01	4.04E-01	7.58E-03	7.66E-03		3.06E-01	
2.00E+04	1.85E-01				1.33E-01				3.01E-02	2.46E-02	9.35E-02	1.52E-01				1.00E-01	
3.00E+04	1.03E-01				9.95E-02				7.96E-03	1.84E-02	1.87E-02	1.28E-01				8.69E-02	
5.00E+04	3.07E-02				1.68E-02				1.00E-03	7.39E-04	3.92E-03	2.39E-02				1.06E-02	
7.00E+04	8.09E-03				8.51E-03					1.70E-04	2.17E-06	1.69E-02				6.54E-03	
1.00E+05	4.87E-03				5.04E-03					7.92E-05		1.02E-02				4.28E-03	
2.00E+05	2.82E-05				3.01E-06							5.47E-04				2.08E-04	
3.00E+05																	
5.00E+05																	
7.00E+05																	
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3.00E+08																	
5.00E+08																	
7.00E+08																	
1.00E+09																	
Mean	1.45E+04	2.48E+01	1.49E+02	3.34E+01	1.20E+04	3.52E-01	1.15E+00	9.39E-01	6.08E+03	5.84E+03	9.57E+03	1.39E+04	1.12E+03	1.12E+03	3.58E+00	1.06E+04	1.23E+01

TABLE 7 (continued)

Area Hectares	Probability of Exceedence, Milk Disposal Area (Hectares)																
	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+03	1.00E+00	4.11E-01	7.10E-01	5.35E-01	1.00E+00	3.66E-01	1.40E-01	4.29E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.99E-01	9.99E-01	4.54E-01	1.00E+00	5.24E-01
2.00E+03	1.00E+00	3.64E-01	6.87E-01	5.19E-01	1.00E+00	9.32E-02	1.04E-01	2.51E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.84E-01	9.84E-01	3.10E-01	1.00E+00	4.81E-01
3.00E+03	1.00E+00	2.20E-01	5.39E-01	4.96E-01	1.00E+00	3.90E-02	3.15E-03	1.37E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.75E-01	9.75E-01	2.26E-01	1.00E+00	4.45E-01
5.00E+03	1.00E+00	1.35E-01	5.24E-01	3.82E-01	9.93E-01	2.85E-04		3.04E-03	1.00E+00	9.87E-01	1.00E+00	1.00E+00	9.22E-01	9.23E-01	7.03E-02	1.00E+00	3.28E-01
7.00E+03	1.00E+00	7.74E-02	4.92E-01	3.34E-01	9.74E-01	1.38E-04		4.82E-04	1.00E+00	9.63E-01	1.00E+00	9.99E-01	8.22E-01	8.21E-01	3.41E-02	9.92E-01	2.10E-01
1.00E+04	1.00E+00	4.11E-02	4.22E-01	2.44E-01	9.47E-01				9.98E-01	9.27E-01	9.99E-01	9.79E-01	7.19E-01	7.14E-01	8.26E-03	9.70E-01	1.04E-01
2.00E+04	9.58E-01	1.35E-04	2.30E-01	4.50E-02	7.93E-01				9.06E-01	7.66E-01	9.66E-01	8.60E-01	5.54E-01	5.52E-01		8.64E-01	1.63E-03
3.00E+04	8.09E-01		4.14E-02	2.76E-04	5.24E-01				6.86E-01	5.56E-01	7.85E-01	6.04E-01	5.06E-01	5.08E-01		6.14E-01	
5.00E+04	5.33E-01		7.63E-04		2.22E-01				4.71E-01	3.18E-01	5.14E-01	4.60E-01	2.43E-01	2.48E-01		4.76E-01	
7.00E+04	3.68E-01				7.40E-02				3.09E-01	1.22E-01	3.91E-01	2.58E-01	7.12E-02	7.27E-02		2.99E-01	
1.00E+05	1.54E-01				9.29E-03				7.16E-02	1.91E-02	1.41E-01	4.59E-02	4.23E-04	4.64E-04		9.49E-02	
2.00E+05																	
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7.00E+08																	
1.00E+09																	
Mean	6.17E+04	1.98E+03	1.04E+04	5.74E+03	3.68E+04	7.95E+02	5.34E+02	1.10E+03	5.29E+04	4.00E+04	6.03E+04	4.87E+04	3.17E+04	3.19E+04	1.57E+03	5.20E+04	3.61E+03

TABLE 7 (continued)

Area Hectares	Probability of Exceedence, Crop Disposal Area (Hectares)																
	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+03	1.00E+00	4.51E-01	7.39E-01	5.30E-01	1.00E+00	2.07E-01	3.97E-02	4.96E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	3.54E-01	1.00E+00	5.24E-01
2.00E+03	1.00E+00	4.05E-01	6.97E-01	4.70E-01	1.00E+00	4.14E-03	3.33E-02	3.73E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.99E-01	9.99E-01	1.99E-01	1.00E+00	4.75E-01
3.00E+03	1.00E+00	2.82E-01	5.23E-01	4.18E-01	1.00E+00	2.37E-04	9.95E-05	2.54E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.92E-01	9.92E-01	8.12E-02	1.00E+00	4.27E-01
5.00E+03	1.00E+00	1.81E-01	4.83E-01	2.62E-01	9.94E-01			7.20E-02	1.00E+00	9.98E-01	1.00E+00	1.00E+00	9.61E-01	9.61E-01	6.22E-03	1.00E+00	2.58E-01
7.00E+03	1.00E+00	1.03E-01	4.08E-01	1.65E-01	9.82E-01			1.57E-02	1.00E+00	9.86E-01	1.00E+00	1.00E+00	9.02E-01	9.03E-01	1.79E-03	1.00E+00	1.63E-01
1.00E+04	1.00E+00	5.48E-02	3.17E-01	7.68E-02	9.48E-01			4.12E-03	9.99E-01	9.59E-01	1.00E+00	9.94E-01	8.01E-01	8.03E-01		9.99E-01	6.17E-02
2.00E+04	9.75E-01	1.33E-03	1.13E-01	6.34E-03	8.04E-01				9.26E-01	8.16E-01	9.82E-01	9.26E-01	5.51E-01	5.51E-01		8.93E-01	1.58E-03
3.00E+04	8.71E-01		4.30E-03		5.16E-01				7.58E-01	5.78E-01	8.80E-01	6.79E-01	4.66E-01	4.70E-01		6.65E-01	
5.00E+04	5.29E-01				1.72E-01				4.30E-01	2.81E-01	5.35E-01	4.61E-01	1.74E-01	1.76E-01		4.42E-01	
7.00E+04	3.13E-01				5.01E-02				2.43E-01	1.06E-01	3.37E-01	2.54E-01	4.66E-02	4.67E-02		2.49E-01	
1.00E+05	1.20E-01				7.50E-03				3.37E-02	3.31E-03	9.39E-02	3.59E-02	2.26E-04	2.26E-04		5.84E-02	
2.00E+05																	
3.00E+05																	
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5.00E+08																	
7.00E+08																	
1.00E+09																	
Mean	6.02E+04	2.43E+03	7.90E+03	3.36E+03	3.46E+04	5.34E+02	3.51E+02	1.69E+03	5.04E+04	3.94E+04	5.93E+04	5.02E+04	2.99E+04	3.00E+04	9.70E+02	5.01E+04	3.20E+03

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LEVEL 3 CONSEQUENCE ASSESSMENT USING FRAMATOME BLENDED LOW ENRICHMENT URANIUM FUEL

FOR

BROWNS FERRY NUCLEAR (SAMA)

Revision 0

January 2002

Prepared by ABS Consulting

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LEVEL 3 CONSEQUENCE ASSESSMENT FOR BROWNS FERRY NUCLEAR (SAMA)

1.0 SUMMARY

A Level 3 consequence assessment update has been completed for Browns Ferry Nuclear (BFN) Units 2 and 3 using the most recent version of the MACCS computer code referred to as MACCS2 V1.12 (MELCOR Accident Consequence Code System).[1] The MACCS2 V1.12 code was developed by Sandia National Laboratories for the NRC (and DOE) and follows a methodology similar to that of its predecessor, the CRAC2[2] code used for the Level 3 analysis in the BFN PRA conducted in 1982. The original version of MACCS was used in the NUREG-1150 degraded core calculations [3]. Definition of source terms was based on the MAAP (Modular Accident Analysis Program)[4] code runs that were completed during the IPE assessment reported in 1992. The 1980 site tower weather data was used to represent weather conditions at the site. All other site data was updated and extrapolated as appropriate to be representative of the year 2036.

2.0 INTRODUCTION

In a probabilistic risk assessment of a nuclear power plant, the ultimate risk is expressed in terms of the health effects and economic impacts that a potential reactor accident would have on the surrounding population. For a particular nuclear plant site, the consequences depend on local meteorological conditions, population distribution, and nature of land usage as well as on the magnitude and characteristics of the radioactive release during the accident. This report describes the basic elements of the consequence analysis, site-specific information around Browns Ferry Nuclear Power Plant, and results of the consequence analysis. Because the results of this analysis are designed to be input into the SAMA economic model, the report focuses on the economic impacts rather than the health impacts.

Each of the major hypothetical accidents identified in the IPE Level 2 study [5] was assigned to one of several release categories based on the primary system and containment responses to the accident conditions calculated by the MAAP code [4]. Each release category has associated release fractions of the initial core radionuclide inventory, which are used as input data to the consequence analysis model.

Assuming that an accident can occur at any given time, there are various factors that would influence the accident consequences. One of the most important factors is the atmospheric dispersion, which is computed based on local meteorological conditions that exist at the time of accident. The meteorological data includes wind direction, wind speed, atmospheric stability (turbulence), and rainfall intensity. The atmospheric dispersion model used in this study is a standard Gaussian dispersion model that accounts for changes in wind speed and precipitation as a function of time after the accident. Along with the atmospheric dispersion model, the dry and wet deposition processes are modeled to determine the air contamination and ground contamination along the plume pathway. The potential radiation dose accumulation is computed from cloud shine, ground shine, inhalation of radioactive material, and ingestion of contaminated food and milk. Evacuation and sheltering of the population, as well as land and food interdiction, are used to mitigate early and latent health effects.

The results of the consequence analysis are presented in the form of complementary cumulative distribution functions (CCDFs). These distributions show the probabilities and magnitudes for various consequences such as early fatalities. The probabilities in a CCDF are presented as conditional probabilities. The conditional probability used in the context of this report is defined as the probability that a consequence of a certain magnitude will occur given that in-plant events leading to the particular ex-plant release under study has occurred. These CCDFs are utilized to generate the overall risk curves when the plant systems and containment failure probabilities are incorporated.

3.0 CONSEQUENCE ANALYSIS METHODOLOGY AND INPUT ASSUMPTIONS

The mathematical and statistical models used in MACCS2 V1.12 are briefly discussed below along with assumptions used to develop input data.

3.1 Released Radioactive Material

During the IPE Level 2 assessment, several MAAP runs were made to characterize potential releases. These release categories have associated probabilities of occurrence and magnitudes of radioactive material release for several groups of isotopes. Releases are given in terms of the fraction of the initial core radioactive inventory. Tennessee Valley Authority Nuclear (TVAN)[11] provided the initial reactor core fission product inventory. The available data set for the Framatome Blended Low Enrichment Uranium fuel and the other two fuel types contained data for more than 650 isotopes, although the set of isotopes included was not the same for each fuel type. MACCS2 allows a maximum of 150 isotopes. The group of isotopes included was determined by first eliminating the isotopes with no dose factors available in the MACCS2 825-isotope data file, then eliminating isotopes that were not available for all three fuel types, and finally eliminating the isotopes that had the lowest activity after 30 minutes of decay. The final list of 150 isotopes includes more than 99% of the total fission product activity. The list of the 150 isotopes used in the analysis and their inventories at 100% power level is shown in Table 1.

In addition to the release magnitude, the parameters that characterize the various releases due to hypothetical accident sequences are time of release, duration of release, warning time for evacuation, height of release, and energy content of the released radioactive plume.

The time of start of release was taken from MAAP runs and refers to the time interval between the start of the hypothetical accident and the release of radioactive material from the containment building to the atmosphere. This parameter is used to calculate the decay of radioactivity as well as timing used in computing dose accumulated by evacuees in relation to plume location and deposited material. The duration of release is the total time during which radioactive material is emitted into the atmosphere; it is used to account for continuous releases by adjusting for horizontal dispersion due to changes in wind direction.

For this analysis, 95% of the population was assumed to evacuate, and the remainder were assumed to remain in place. The analysis further assumed that people who had not evacuated would be relocated when the total effective dose commitment to an individual exceeded the threshold of .25 Sieverts. Finally, the height of release and the energy content of the released plume affect the manner in which the plume would be dispersed in the atmosphere. Because this information could not be determined from the MAAP release files, the release was conservatively assumed to be at ground level with no heat energy to give plume rise. Source

term assumptions are provided in Table 2 with the risk dominant release phase indicated in bold print.

TABLE 1. BFN UNITS 2 AND 3 INITIAL CORE INVENTORY (Framatome Blended Low Enrichment Uranium Fuel at 100% POWER)

Isotope Name	Core Inventory (Bq)	Isotope Name	Core Inventory (Bq)	Isotope Name	Core Inventory (Bq)	Isotope Name	Core Inventory (Bq)
Cr-51	1.690E+17	Nb-97m	6.705E+18	Te-127	3.138E+17	Ce-141	6.728E+18
Mn-54	1.413E+16	Mo-99	7.491E+18	Te-127m	5.314E+16	Ce-143	6.332E+18
Mn-56	3.618E+17	Mo-101	6.700E+18	Te-129	1.167E+18	Ce-144	5.682E+18
Fe-55	5.597E+16	Tc-99m	6.643E+18	Te-129m	2.352E+17	Pr-142	2.103E+17
Co-58	2.129E+16	Tc-101	6.700E+18	Te-131m	7.463E+17	Pr-143	6.134E+18
Co-60	9.470E+15	Tc-104	4.692E+18	Te-131	3.336E+18	Pr-144	5.710E+18
As-78	2.725E+16	Ru-103	5.908E+18	Te-132	5.654E+18	Pr-144m	8.000E+16
Ge-78	2.691E+16	Rh-103m	5.908E+18	Te-133	4.495E+18	Pr-145	4.297E+18
Se-81	2.066E+17	Ru-105	3.816E+18	Te-133m	3.703E+18	Pr-147	2.677E+18
Se-81m	1.459E+16	Rh-105	3.618E+18	Te-134	7.406E+18	Nd-147	2.694E+18
Se-83	2.375E+17	Ru-106	2.061E+18	I-128	3.251E+16	Nd-149	1.498E+18
Br-82	1.176E+16	Rh-106	2.202E+18	I-130	7.208E+16	Nd-151	7.434E+17
Br-83	5.060E+17	Rh-106m	6.247E+16	I-131	3.901E+18	Pm-147	9.922E+17
Br-84	9.498E+17	Rh-107	2.114E+18	I-132	5.767E+18	Pm-148	6.784E+17
Kr-83m	5.117E+17	Pd-109	1.207E+18	I-133	8.226E+18	Pm-148m	1.450E+17
Kr-85	5.371E+16	Ag-109m	1.207E+18	I-134	9.159E+18	Pm-149	2.219E+18
Kr-85m	1.071E+18	Ag-110m	1.057E+16	I-135	7.802E+18	Pm-150	1.521E+16
Kr-87	2.157E+18	Ag-111	2.016E+17	Xe-131m	5.201E+16	Pm-151	7.519E+17
Kr-88	2.996E+18	Ag-112	9.385E+16	Xe-133	7.887E+18	Sm-153	1.597E+18
Rb-86	6.841E+15	Cd-115	2.940E+16	Xe-133m	2.567E+17	Sm-155	1.295E+17
Rb-88	3.081E+18	Cd-117	2.940E+16	Xe-135	2.940E+18	Sm-156	7.972E+16
Rb-89	4.042E+18	In-113m	1.125E+16	Xe-135m	1.671E+18	Eu-154	3.163E+16
Sr-89	4.156E+18	In-115m	2.940E+16	Xe-138	7.095E+18	Eu-155	1.276E+16
Sr-90	4.721E+17	In-116m	1.852E+16	Cs-134	6.586E+17	Eu-156	6.898E+17
Sr-91	5.201E+18	In-117m	2.688E+16	Cs-134m	1.413E+17	Eu-157	7.124E+16
Sr-92	5.484E+18	In-117	2.188E+16	Cs-135m	1.117E+17	Eu-158	2.855E+16
Y-90	4.896E+17	Sn-113	1.125E+16	Cs-136	2.375E+17	Gd-159	6.417E+17
Y-91	5.343E+18	Sn-121	5.114E+16	Cs-137	5.993E+17	W-187	1.541E+16
Y-91m	3.025E+18	Sn-123m	3.139E+16	Cs-138	7.661E+18	Pu-238	4.184E+16
Y-92	5.512E+18	Sn-127	1.264E+17	Ba-137m	5.682E+17	Np-239	6.813E+19
Y-93	4.155E+18	Sn-128	5.399E+17	Ba-139	7.321E+18	Pu-239	1.840E+15
Y-94	6.530E+18	Sb-125	4.418E+16	Ba-140	7.321E+18	Pu-240	2.448E+15
Y-95	6.756E+18	Sb-131	3.138E+18	Ba-141	6.643E+18	Pu-241	6.162E+17
Zr-95	7.279E+18	Sn-125	1.901E+16	Ba-142	6.360E+18	Am-241	8.113E+14
Nb-95	7.304E+18	Sb-127	3.166E+17	La-140	7.802E+18	Cm-242	1.648E+17
Nb-95m	8.076E+16	Sb-129	1.232E+18	La-141	6.700E+18	Cm-244	6.049E+15
Zr-97	7.042E+18	Sb-130	4.099E+17	La-142	6.558E+18		
Nb-97	7.098E+18	Te-125m	9.648E+15	La-143	6.304E+18		

TABLE 2. SOURCE TERM ASSUMPTIONS

Release Phase	Release Time, s	Release Duration, s	Release Data for MACCS: Case ENMKCTT								
			Kr-Xe	I	Cs	Te-Sb	Sr	Ru	La	Ce	Ba
1	1275.1	7096.4	6.510E-1	6.294E-4	4.982E-4	5.092E-7	1.272E-6	1.322E-4	6.443E-8	2.859E-7	2.825E-5
2	8371.5	13233.4	3.434E-1	1.752E-1	1.850E-1	2.213E-2	7.608E-5	1.409E-2	1.645E-5	1.776E-4	1.595E-3
3	21604.9	43205.7	5.600E-3	2.600E-2	3.511E-2	8.616E-2	3.055E-3	0.000E0	2.872E-4	9.501E-4	1.244E-3
4	64810.6	64800.0	0.000E0	4.640E-2	4.249E-2	6.284E-2	4.790E-4	0.000E0	2.070E-5	1.760E-4	2.110E-4

Risk Dominant Plume 2

Warning Time (From Scram), s 600

Release Phase	Release Time, s	Release Duration, s	Release Data for MACCS: Case MIALF								
			Kr-Xe	I	Cs	Te-Sb	Sr	Ru	La	Ce	Ba
1	11220.4	10383.0	5.281E-1	2.620E-4	1.171E-3	2.198E-5	6.341E-7	3.541E-6	2.134E-8	4.627E-8	4.521E-6
2	21603.3	21601.8	1.531E-1	3.540E-5	1.578E-4	2.008E-6	5.540E-8	2.970E-7	9.00E-10	2.060E-9	4.500E-7
3	43205.1	43200.9	1.125E-1	1.340E-5	5.209E-5	5.375E-7	1.510E-8	9.400E-8	1.50E-10	2.60E-10	3.620E-7
4	86406.0	43194.2	2.100E-2	1.900E-6	6.643E-6	6.776E-8	2.000E-9	1.700E-8	1.00E-11	2.00E-11	5.350E-7

Risk Dominant Plume 1

Warning Time (From Scram), s 2627.7

Release Phase	Release Time, s	Release Duration, s	Release Data for MACCS: Case NIH								
			Kr-Xe	I	Cs	Te-Sb	Sr	Ru	La	Ce	Ba
1	34363.1	8854.8	1.642E-2	3.452E-4	3.256E-4	7.437E-5	1.235E-6	1.291E-5	1.330E-7	5.041E-7	3.099E-6
2	43217.8	21611.1	5.926E-1	4.736E-3	5.208E-3	1.530E-3	6.917E-5	8.600E-6	7.150E-6	2.855E-5	3.296E-5
3	64829.0	21606.0	1.638E-1	6.000E-6	2.088E-5	1.451E-4	2.040E-6	1.000E-8	1.760E-7	1.830E-6	9.400E-7
4	86435.0	43173.0	1.134E-1	1.540E-4	1.800E-4	9.559E-4	1.000E-8	1.900E-7	2.000E-9	2.000E-8	3.400E-7

Risk Dominant Plume 2

Warning Time (From Scram), s 600

Release Phase	Release Time, s	Release Duration, s	Release Data for MACCS: Case NIHNSP								
			Kr-Xe	I	Cs	Te-Sb	Sr	Ru	La	Ce	Ba
1	34363.1	8847.4	4.607E-2	1.493E-3	1.279E-3	1.600E-4	2.231E-6	1.827E-5	1.846E-7	6.979E-7	7.831E-6
2	43210.4	21615.2	7.743E-2	1.880E-4	2.140E-4	2.836E-4	1.771E-5	1.500E-7	1.918E-6	8.135E-6	7.449E-6
3	64825.7	21608.5	7.980E-2	1.300E-5	2.974E-5	1.978E-4	5.870E-6	2.000E-8	5.560E-7	4.027E-6	2.560E-6
4	86434.2	43184.0	1.028E-1	1.080E-4	1.285E-4	7.365E-4	5.900E-7	1.300E-7	5.600E-8	4.200E-7	4.500E-7

Risk Dominant Plume 1

Warning Time (From Scram), s 600

TABLE 2 (continued)

Release Phase	Release Time, s	Release Duration, s	Release Data for MACCS: Case OIA								
			Kr-Xe	I	Cs	Te-Sb	Sr	Ru	La	Ce	Ba
1	96989.5	11032.8	9.471E-1	1.840E-1	1.887E-1	4.224E-2	5.210E-7	3.356E-7	4.231E-8	3.792E-7	2.644E-6
2	108022.3	21580.0	1.000E-4	2.550E-2	2.876E-2	4.751E-3	7.650E-8	1.833E-6	1.120E-9	7.300E-9	1.930E-7

Risk Dominant Plume 1

Warning Time (From Scram), s 994.3

Release Phase	Release Time, s	Release Duration, s	Release Data for MACCS: Case OIALF								
			Kr-Xe	I	Cs	Te-Sb	Sr	Ru	La	Ce	Ba
1	18177.6	3433.0	5.743E-3	7.723E-5	5.483E-5	1.025E-5	1.231E-7	1.937E-6	1.825E-8	1.465E-7	3.114E-7
2	21610.6	21607.3	2.774E-1	3.387E-5	4.938E-5	3.484E-5	1.776E-6	1.680E-7	1.676E-7	7.975E-7	7.736E-7
3	43217.9	43211.0	4.665E-1	4.460E-5	6.060E-5	2.742E-4	4.220E-7	1.400E-7	3.960E-8	3.550E-7	2.560E-7
4	86428.9	43190.4	1.479E-1	5.600E-5	1.192E-4	5.478E-5	2.500E-8	3.000E-8	9.00E-10	1.100E-8	2.100E-8

Risk Dominant Plume 3

Warning Time (From Scram), s 994.3

Release Phase	Release Time, s	Release Duration, s	Release Data for MACCS: Case PID								
			Kr-Xe	I	Cs	Te-Sb	Sr	Ru	La	Ce	Ba
1	78449.2	7967.3	3.570E-2	2.054E-5	2.182E-5	2.054E-5	5.744E-7	9.485E-6	1.287E-7	3.629E-7	2.600E-6
2	86416.5	21603.6	4.388E-1	1.450E-4	1.583E-4	5.241E-4	1.461E-5	1.408E-5	1.646E-6	6.642E-6	1.046E-5
3	108020.2	21597.2	1.320E-1	5.000E-7	5.930E-7	9.167E-6	1.290E-6	0.000E0	1.110E-7	8.990E-7	5.100E-7

Risk Dominant Plume 2

Warning Time (From Scram), s 600

Release Phase	Release Time, s	Release Duration, s	Release Data for MACCS: Case PIDNSP								
			Kr-Xe	I	Cs	Te-Sb	Sr	Ru	La	Ce	Ba
1	62069.6	2761.5	5.438E-3	1.322E-5	1.679E-5	3.184E-5	8.986E-7	4.381E-6	1.664E-7	7.880E-7	1.186E-6
2	64831.0	21602.1	3.253E-1	1.188E-4	1.117E-4	3.531E-3	1.634E-4	3.364E-6	1.782E-5	5.887E-5	6.547E-5
3	86433.1	21600.0	2.342E-1	3.030E-5	3.988E-5	9.549E-4	9.140E-5	4.900E-7	8.020E-6	3.539E-5	3.554E-5
4	108033.1	21580.0	1.048E-1	5.100E-5	8.643E-5	6.164E-4	2.050E-5	5.000E-8	1.420E-6	1.015E-5	8.200E-6

Risk Dominant Plume 2

Warning Time (From Scram), s 600

TABLE 2 (continued)

Release Phase	Release Time, s	Release Duration, s	Release Data for MACCS: Case PIHDEP								
			Kr-Xe	I	Cs	Te-Sb	Sr	Ru	La	Ce	Ba
1	67127.5	19313.4	9.467E-1	5.450E-2	4.927E-2	1.401E-1	6.315E-4	3.389E-6	4.200E-5	4.658E-4	2.687E-4
2	86440.9	21600.0	2.000E-4	2.373E-2	1.979E-2	1.935E-2	7.900E-6	3.927E-6	7.400E-7	4.700E-6	1.430E-5
3	108040.9	21560.0	1.000E-4	5.867E-2	5.575E-2	5.173E-3	3.000E-7	6.464E-6	3.000E-8	1.000E-7	5.540E-5

Risk Dominant Plume 1

Warning Time (From Scram), s 14400

Release Phase	Release Time, s	Release Duration, s	Release Data for MACCS: Case PIHDEPV								
			Kr-Xe	I	Cs	Te-Sb	Sr	Ru	La	Ce	Ba
1	79000.6	7432.0	9.453E-1	9.975E-2	8.234E-2	7.246E-2	1.772E-5	1.308E-6	1.441E-6	1.168E-5	9.528E-6
2	86432.6	21600.0	3.000E-4	1.375E-2	1.078E-2	2.943E-2	8.150E-6	3.088E-6	7.960E-7	4.600E-6	4.732E-6
3	108032.6	21580.0	2.000E-4	1.070E-2	2.243E-2	1.097E-2	4.600E-7	5.330E-7	4.800E-8	2.100E-7	1.040E-6

Risk Dominant Plume 1

Warning Time (From Scram), s 14400

Release Phase	Release Time, s	Release Duration, s	Release Data for MACCS: Case PIHDHB								
			Kr-Xe	I	Cs	Te-Sb	Sr	Ru	La	Ce	Ba
1	51487.8	13336.3	9.467E-1	3.051E-2	5.478E-2	2.427E-1	3.589E-2	3.554E-5	8.160E-3	2.549E-2	1.476E-2
2	64824.1	21614.7	2.000E-4	3.989E-2	3.874E-2	3.242E-2	2.560E-3	4.600E-7	3.220E-4	2.700E-3	1.150E-3
3	86438.7	21600.0	1.000E-4	2.616E-2	2.326E-2	9.753E-2	1.000E-5	9.890E-6	0.000E0	1.000E-5	5.000E-5
4	108038.7	21580.0	1.000E-4	4.414E-2	5.573E-2	3.377E-3	0.000E0	6.040E-6	0.000E0	0.000E0	1.100E-4

Risk Dominant Plume 1

Warning Time (From Scram), s 14400

Release Phase	Release Time, s	Release Duration, s	Release Data for MACCS: Case PIHDLF								
			Kr-Xe	I	Cs	Te-Sb	Sr	Ru	La	Ce	Ba
1	44490.1	20328.0	9.401E-1	1.879E-1	2.268E-1	1.125E-1	1.089E-2	1.889E-3	1.534E-3	6.683E-3	4.993E-3
2	64818.1	21612.5	7.100E-3	9.400E-3	8.191E-3	2.543E-2	1.370E-3	4.000E-6	1.700E-4	1.512E-3	6.140E-4
3	86430.6	21601.9	4.000E-4	4.300E-3	9.694E-3	8.866E-2	2.000E-5	4.100E-5	2.000E-6	1.400E-5	3.500E-5
4	108032.5	21580.0	0.000E0	1.900E-3	7.852E-3	3.882E-2	0.000E0	5.000E-6	0.000E0	1.000E-6	9.000E-6

Risk Dominant Plume 1

Warning Time (From Scram), s 14400

TABLE 2 (continued)

Release Phase	Release Time, s	Release Duration, s	Release Data for MACCS: Case PIHDLV								
			Kr-Xe	I	Cs	Te-Sb	Sr	Ru	La	Ce	Ba
1	39529.3	3686.7	5.764E-1	7.857E-3	5.919E-3	1.374E-3	3.039E-5	9.805E-5	2.825E-6	7.652E-6	5.580E-5
2	43216.0	21607.1	3.391E-1	1.856E-2	1.835E-2	1.289E-2	9.796E-4	1.295E-5	1.170E-4	4.787E-4	4.314E-4
3	64823.1	21607.1	2.570E-2	1.500E-4	4.848E-4	3.437E-3	1.130E-4	2.400E-6	1.100E-5	1.091E-4	5.440E-5
4	86430.2	43185.1	4.900E-3	5.680E-3	9.298E-3	4.494E-2	3.000E-6	5.000E-7	4.000E-7	2.400E-6	1.800E-6

Risk Dominant Plume 2

Warning Time (From Scram), s 14400

Release Phase	Release Time, s	Release Duration, s	Release Data for MACCS: Case PIHNDP								
			Kr-Xe	I	Cs	Te-Sb	Sr	Ru	La	Ce	Ba
1	37392.5	5834.7	5.764E-1	7.857E-3	5.919E-3	1.374E-3	3.039E-5	9.805E-5	2.825E-6	7.652E-6	5.580E-5
2	43227.3	21612.2	3.391E-1	1.856E-2	1.835E-2	1.289E-2	9.796E-4	1.295E-5	1.170E-4	4.787E-4	4.314E-4
3	64839.4	21614.0	2.570E-2	1.500E-4	4.848E-4	3.437E-3	1.130E-4	2.400E-6	1.100E-5	1.091E-4	5.440E-5
4	86453.4	43160.0	4.900E-3	5.680E-3	9.298E-3	4.494E-2	3.000E-6	5.000E-7	4.000E-7	2.400E-6	1.800E-6

Risk Dominant Plume 2

Warning Time (From Scram), s 14400

Release Phase	Release Time, s	Release Duration, s	Release Data for MACCS: Case PJH								
			Kr-Xe	I	Cs	Te-Sb	Sr	Ru	La	Ce	Ba
1	5703.7	15915.4	1.166E-1	7.126E-5	6.364E-5	1.618E-5	9.112E-7	4.807E-7	1.005E-7	3.381E-7	5.531E-7
2	21619.1	21607.3	2.551E-1	1.384E-5	1.324E-5	9.952E-6	3.228E-7	1.800E-9	3.490E-8	1.994E-7	1.465E-7
3	43226.4	43213.6	2.621E-1	2.130E-5	2.961E-5	9.661E-5	5.700E-8	2.700E-9	5.400E-9	2.920E-8	2.610E-8
4	86440.0	43178.1	9.590E-2	3.996E-4	4.806E-4	2.555E-4	1.900E-8	2.00E-10	1.100E-9	8.300E-9	1.090E-8

Risk Dominant Plume 1

Warning Time (From Scram), s 600

Release Phase	Release Time, s	Release Duration, s	Release Data for MACCS: Case PJHNSP								
			Kr-Xe	I	Cs	Te-Sb	Sr	Ru	La	Ce	Ba
1	1303.2	3625.2	3.264E-2	6.979E-3	6.979E-3	2.816E-4	3.603E-6	1.216E-5	4.365E-8	7.230E-8	2.945E-5
2	4928.4	16680.1	5.030E-1	1.760E-1	1.754E-1	1.526E-2	4.186E-4	9.610E-4	3.977E-5	1.188E-4	8.570E-4
3	21608.6	43200.0	2.862E-1	1.240E-2	1.417E-2	1.969E-2	3.258E-4	4.380E-5	3.546E-5	1.535E-4	1.706E-4
4	64808.6	64800.0	5.670E-2	7.200E-3	9.990E-3	7.074E-2	6.700E-6	5.000E-6	6.600E-7	4.100E-6	4.000E-6

Risk Dominant Plume 2

Warning Time (From Scram), s 600

TABLE 2 (continued)

Release Phase	Release Time, s	Release Duration, s	Release Data for MACCS: Case PLF								
			Kr-Xe	I	Cs	Te-Sb	Sr	Ru	La	Ce	Ba
1	34389.1	8841.	5.468E-2	1.346E-4	1.503E-4	1.546E-5	5.850E-7	6.285E-6	8.312E-8	5.875E-7	1.723E-6
2	**43230.7**	**21618.**	**5.662E-1**	**4.596E-4**	**7.236E-4**	**4.222E-3**	**1.564E-4**	**1.174E-5**	**1.469E-5**	**6.020E-5**	**6.580E-5**
3	64848.9	21619.	1.421E-1	1.780E-5	4.552E-5	1.088E-4	1.200E-6	1.000E-8	1.000E-7	1.110E-6	7.600E-7
4	86468.3	43145.	1.187E-1	2.610E-4	2.800E-4	9.108E-4	0.000E0	1.040E-6	0.000E0	1.000E-8	6.000E-7

Risk Dominant Plume 2

Warning Time (From Scram), s 14251.5

3.2 Meteorological Data Sampling Method

The atmospheric dispersion of radioactive material from a postulated accident depends on the meteorological conditions that exist from the start of the accident through a period of tens to hundreds of hours following the accident. Since the weather that could occur coincident with the accident is diverse, representative meteorological data sequences are selected as input to the dispersion model to reflect the dependence of the transport and dispersion process on the site weather. The selection process is done by means of sampling techniques from a full year of hourly weather data taken from the BFN on-site meteorological tower. For this analysis, the technique referred to as weather bin sampling in the MACCS2 V1.12 code was used for the 1980 year of data.

This sampling method ensures a complete coverage of diurnal, seasonal, and 4-day cycles without the statistical noise of methods that utilize random sampling and includes the "rain tails" (ground shine dose from deposition due to delayed rain).

The meteorological data assessment is done by sorting the weather sequence into categories that provide a realistic representation of the year's weather without overlooking weather conditions that are instrumental in producing major consequences. A set of 40 weather categories has been selected for the MACCS2 V1.12 model to reflect these requirements. Up to eight meteorological scenarios are selected for each category, limited by the number of meteorological scenarios available for that category.

Given a postulated large accident, large numbers of early fatalities and injuries are normally associated with relatively low probability weather events such as rainfall or wind speed slowdowns within 50 miles of the plant site or with stable weather and moderate wind speeds at the start of the release. In MACCS2 V1.12 these weather data types have been selected to be among the 40 categories utilized in the assessment process.

The 40 categories are described in Table 3 where the frequency of occurrence of weather for each category is given. The weather data represent one year of meteorological data for the Browns Ferry Nuclear Plant site. The entire year of data, 8760 hourly recordings, are sorted into the 40 weather categories. Each sequence is examined to determine (1) the first occurrence of rain within 50 miles of the site, or (2) the stability category and wind speed at the start of the sequence. The first of these conditions that is satisfied by the sequence determines the weather category to which it is assigned. Following the assessment process, the start hour of each weather sequence will have been assigned to one and only one weather category. Each of the weather categories then includes a set of weather sequences representing the corresponding weather type. The probability of occurrence of that weather type is the ratio of the number of weather sequences in the category to the total number of sequences in the year's weather data set.

With this information, weather sequences can be sampled to reflect the weather data for the full year. This ensures representation of each type of weather sequence, those important to realistic representation of the weather data set, and those important to the occurrence of the most serious accident consequences due to rainout in high population areas.

TABLE 3. WEATHER DATA CATEGORIES

	METBIN		WIND DIRECTION 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	TOTAL	PER CENT
1	B[1]	3[2]	0.181	0.078	0.054	0.102	0.018	0.018	0.000	0.003	0.006	0.021	0.009	0.000	0.000	0.003	0.316	0.190	332	3.7900
2	B	4	0.027	0.008	0.011	0.084	0.076	0.103	0.163	0.053	0.183	0.167	0.068	0.000	0.000	0.000	0.038	0.019	263	3.0023
3	D	1	0.179	0.051	0.038	0.051	0.038	0.051	0.026	0.038	0.038	0.051	0.064	0.077	0.038	0.013	0.115	0.128	78	0.8904
4	D	2	0.151	0.076	0.065	0.096	0.037	0.039	0.019	0.015	0.034	0.030	0.025	0.029	0.032	0.027	0.154	0.171	801	9.1438
5	D	3	0.073	0.041	0.036	0.112	0.080	0.083	0.057	0.052	0.083	0.108	0.087	0.024	0.024	0.014	0.077	0.050	714	8.1507
6	D	4	0.031	0.006	0.006	0.077	0.066	0.103	0.096	0.100	0.182	0.193	0.093	0.009	0.000	0.001	0.032	0.006	809	9.2352
7	D	5	0.005	0.008	0.008	0.042	0.037	0.164	0.138	0.175	0.233	0.151	0.024	0.000	0.000	0.000	0.011	0.003	377	4.3037
8	D	6	0.000	0.012	0.000	0.000	0.047	0.188	0.271	0.282	0.141	0.047	0.012	0.000	0.000	0.000	0.000	0.000	85	0.9703
9	E	1	0.144	0.088	0.043	0.045	0.050	0.015	0.020	0.028	0.038	0.063	0.053	0.055	0.045	0.048	0.128	0.136	397	4.5320
10	E	2	0.124	0.065	0.013	0.121	0.099	0.013	0.016	0.037	0.042	0.059	0.047	0.039	0.058	0.042	0.148	0.076	815	9.3037
11	E	3	0.090	0.029	0.008	0.065	0.149	0.029	0.037	0.065	0.106	0.106	0.039	0.020	0.014	0.041	0.141	0.061	490	5.5936
12	E	4	0.071	0.009	0.003	0.021	0.047	0.041	0.079	0.159	0.144	0.232	0.050	0.006	0.003	0.009	0.085	0.041	340	3.8813
13	F	1	0.058	0.041	0.022	0.017	0.009	0.019	0.026	0.073	0.147	0.119	0.088	0.065	0.043	0.039	0.153	0.082	464	5.2968
14	F	2	0.044	0.010	0.011	0.028	0.044	0.016	0.016	0.047	0.092	0.151	0.056	0.078	0.176	0.061	0.094	0.075	816	9.3151
15	F	3	0.041	0.007	0.004	0.011	0.037	0.011	0.011	0.097	0.146	0.261	0.075	0.082	0.049	0.007	0.067	0.093	268	3.0594
16	F	4	0.150	0.013	0.000	0.000	0.000	0.025	0.038	0.163	0.150	0.237	0.050	0.038	0.000	0.000	0.050	0.087	80	0.9132
17	R1[3]	3[4]	0.079	0.013	0.008	0.024	0.029	0.034	0.024	0.061	0.069	0.069	0.045	0.082	0.140	0.103	0.132	0.087	378	4.3151
18	R1	8	0.162	0.014	0.000	0.014	0.014	0.014	0.000	0.068	0.027	0.014	0.027	0.068	0.162	0.149	0.135	0.135	74	0.8447
19	R1	16	0.143	0.032	0.008	0.032	0.056	0.024	0.024	0.048	0.056	0.032	0.040	0.063	0.095	0.087	0.119	0.143	126	1.4384
20	R1	32	0.100	0.028	0.005	0.043	0.033	0.019	0.038	0.033	0.038	0.038	0.047	0.066	0.100	0.090	0.161	0.161	211	2.4087
21	R1	48	0.100	0.027	0.000	0.053	0.033	0.020	0.007	0.040	0.053	0.080	0.047	0.067	0.053	0.060	0.180	0.180	150	1.7123
22	R1	80	0.098	0.016	0.019	0.048	0.019	0.035	0.003	0.048	0.044	0.067	0.086	0.057	0.035	0.051	0.210	0.165	315	3.5959
23	R2	3	0.051	0.020	0.000	0.000	0.010	0.020	0.020	0.071	0.041	0.061	0.102	0.071	0.143	0.112	0.163	0.112	98	1.1187
24	R2	8	0.000	0.000	0.000	1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1	0.0114
25	R2	16	0.200	0.100	0.000	0.000	0.000	0.100	0.000	0.100	0.000	0.000	0.100	0.000	0.000	0.100	0.200	0.100	10	0.1142
26	R2	32	0.385	0.000	0.000	0.000	0.000	0.231	0.077	0.000	0.000	0.077	0.077	0.000	0.000	0.000	0.154	0.000	13	0.1484
27	R2	48	0.300	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.200	0.200	0.000	0.000	0.200	0.100	10	0.1142
28	R2	80	0.217	0.087	0.000	0.000	0.000	0.000	0.000	0.000	0.043	0.043	0.130	0.000	0.043	0.043	0.174	0.217	23	0.2626
29	R3	3	0.132	0.000	0.000	0.000	0.000	0.026	0.000	0.026	0.026	0.079	0.105	0.079	0.053	0.079	0.184	0.211	38	0.4338
30	R3	8	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.000	0.000	1	0.0114
31	R3	16	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.000	1	0.0114
32	R3	32	0.000	0.000	0.000	0.000	0.000	0.333	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.333	0.333	3	0.0342
33	R3	48	0.000	0.000	0.000	0.000	0.000	1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1	0.0114
34	R3	80	0.000	0.000	0.000	0.000	0.000	0.333	0.667	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3	0.0342
35	R4	3	0.059	0.059	0.020	0.039	0.000	0.000	0.059	0.039	0.137	0.039	0.059	0.059	0.137	0.059	0.196	0.039	51	0.5822
36	R4	8	0.000	0.000	0.000	0.100	0.000	0.000	0.000	0.000	0.100	0.200	0.000	0.100	0.100	0.000	0.300	0.100	10	0.1142
37	R4	16	0.105	0.105	0.000	0.000	0.053	0.000	0.000	0.000	0.105	0.053	0.000	0.000	0.105	0.105	0.263	0.105	19	0.2169
38	R4	32	0.000	0.000	0.032	0.097	0.000	0.065	0.032	0.000	0.097	0.065	0.065	0.000	0.129	0.065	0.194	0.161	31	0.3539
39	R4	48	0.050	0.000	0.000	0.050	0.100	0.100	0.000	0.000	0.050	0.050	0.100	0.050	0.100	0.000	0.250	0.100	20	0.2283
40	R4	80	0.091	0.091	0.023	0.091	0.045	0.023	0.000	0.023	0.068	0.023	0.045	0.000	0.000	0.000	0.295	0.182	44	0.5023
41	ALL		0.086	0.035	0.020	0.062	0.054	0.047	0.044	0.063	0.093	0.107	0.057	0.039	0.051	0.035	0.120	0.088	8760	

* * * * METEOROLOGICAL BIN SUMMARY * * * *

BIN PRIORITIES

S V - INITIAL WEATHER CONDITIONS WITH STABILITY CLASS S AND WIND SPEED INTERVAL V

(1) STABILITY CLASSES ARE B = A/B, D = C/D, E = E, AND F = F

(2) WIND SPEED INTERVALS ARE IN METERS PER SECOND, 1 (0-1), 2 (1-2), 3 (2-3), 4 (3-5), 5 (5-7), 6 (GT 7)

RI XX - RAIN INTENSITY I WITHIN THE INTERVAL ENDING AT XX

(3) INTERVAL ENDPOINTS ARE IN KILOMETERS FROM THE ACCIDENT SITE, THE 6 INTERVAL ENDPOINTS ARE 3 8 16 32 48 80 (km)

(4) RAIN INTENSITIES ARE IN MILLIMETERS OF RAIN PER HOUR, THE 3 INTENSITY BREAKPOINTS ARE 2.0 4.0 6.0 (mm/hr)

3.3 Population Distribution and Land Use

Population estimates for the year 2036 within 50 miles of the BFN plant were provided by TVAN [12] and are shown in Table 4. The chronic dose calculation covered a 50-mile radius. Habitable land fraction was estimated from regional maps in each of the 16 polar grid segments and is shown in Table 5.

3.4 Atmospheric Transport and Dispersion

The dispersion model implemented in MACCS2 V1.12 is described in detail in NUREG/CR-4691, Volume 2[13]. It is a Gaussian, time-dependent, plume segment model that has been in use for consequence assessments since the Reactor Safety Study (RSS)[7] in 1975. The plume is assumed to be transported in a straight line downwind in accordance with the measured wind direction. A surface roughness of 10 cm was used for the BFN site.

For each start hour selected by the meteorological sampling technique, the MAACS2 V1.12 dispersion model uses the subsequent meteorological conditions to predict the dispersion and transport of the released plume of radioactive material. The sequence of hourly recordings is used to account for changing meteorological conditions (i.e., wind speed, atmospheric thermal stability, and rain intensity may change during plume passage). The wind direction; however, is assumed to be invariant during and following the release.

Based on the wind speed in each hour, the stability, wind speed, and accumulated rainfall are assigned to all spatial intervals through which the plume passes during the hour. If the wind speed for an hour is not sufficient for the plume to fully traverse an interval, the wind speed, stability, and accumulated precipitation are averaged for all hours the plume is within that interval.

In MACCS2 V1.12, the effects of release duration, mixing layer depth, building wake, plume rise due to sensible heat buoyancy, and dry and wet removal processes are included. The ground concentration is calculated from the air concentration and the deposition rate. The radioactive material deposited on the ground is subtracted from the airborne radioactive material.

3.5 Radiation Exposure Pathways and Dosimetry

The calculation of radiation exposure in MACCS2 V1.12 is divided into two categories: early exposure that occurs during and shortly after radioactive plume passage, and chronic exposure that occurs over a longer time period. These two categories of exposure are discussed separately. The MACCS2 825-isotope data file was used to obtain dose factors for the calculation.

3.5.1 Early Exposure

The calculation of radiation doses due to early exposure considers the pathways: cloud shine, ground shine and inhalation.

TABLE 4. POPULATION DATA (estimated for 2036)

Sector	Distance Range, miles										
	0-1	1-2	2-3	3-4	4-5	5-10	10-20	20-30	30-40	40-50	Total
N	2	18	203	379	501	2,501	2,710	6,269	19,130	8,662	40,375
NNE	0	5	33	379	521	1,931	10,929	3,393	3,965	5,432	26,588
NE	2	10	65	114	278	8,350	21,034	23,783	16,920	17,488	88,044
ENE	6	82	365	289	432	2,273	35,534	69,528	63,014	10,840	182,363
E	11	54	25	13	53	5,170	5,731	136,377	105,268	12,263	264,965
ESE	5	9	208	0	0	86	1,096	4,229	20,885	17,799	44,317
SE	2	0	0	0	2	7,626	40,473	12,373	11,248	36,295	108,019
SSE	0	0	1	0	1	16,037	28,541	26,702	36,087	42,023	149,392
S	0	3	29	59	25	1,768	7,038	4,083	8,813	15,505	37,323
SSW	0	2	12	235	343	3,708	12,873	1,467	2,417	6,519	27,576
SW	0	0	3	90	381	1,523	6,376	3,318	4,075	19,955	35,721
WSW	0	0	70	122	79	168	3,957	3,895	29,617	4,376	42,284
W	0	55	200	15	3	69	3,855	17,460	37,892	4,842	64,391
WNW	0	0	1	4	2	85	3,124	28,974	51,789	11,954	95,933
NW	0	2	8	4	33	640	11,805	9,717	6,912	4,615	33,736
NNW	52	467	272	84	104	3,104	3,232	3,110	24,997	16,467	51,889
Total	80	707	1,495	1,787	2,758	55,039	198,308	354,678	443,029	235,035	1,292,916

TABLE 5. HABITABLE LAND FRACTION										
	Distance Interval, miles									
Sector	0-1	1-2	2-3	3-4	4-5	5-10	10-20	20-30	30-40	40-50
N	1.00	1.00	1.00	1.00	1.00	0.80	0.90	1.00	1.00	1.00
NNE	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
NE	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
ENE	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
E	1.00	1.00	1.00	0.80	0.90	0.90	1.00	0.90	1.00	1.00
ESE	0.90	0.70	0.80	0.10	0.10	0.20	0.60	0.90	0.90	0.90
SE	0.00	0.20	0.00	0.00	0.30	0.50	0.60	1.00	1.00	1.00
SSE	0.00	0.00	0.00	0.00	0.30	1.00	1.00	1.00	1.00	0.90
S	0.00	0.10	0.20	0.60	1.00	1.00	1.00	1.00	0.90	0.70
SSW	0.00	0.20	0.80	0.90	1.00	1.00	1.00	1.00	0.90	0.90
SW	0.00	0.80	0.90	0.95	1.00	1.00	1.00	1.00	1.00	1.00
WSW	0.00	0.70	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
W	0.00	0.80	0.90	1.00	1.00	0.90	1.00	1.00	0.90	0.90
WNW	0.00	0.00	0.20	0.70	0.80	0.40	0.60	0.60	0.90	1.00
NW	0.00	0.00	0.10	0.20	0.30	0.50	1.00	1.00	1.00	1.00
NNW	0.50	0.30	0.30	1.00	1.00	0.80	1.00	1.00	1.00	1.00

Conversion factors for early health effects are not available for several of the isotopes used in this analysis, therefore early doses and health effects were not calculated.

3.5.2 Chronic Exposure

The calculation of doses due to chronic exposure considers four pathways including long-term ground shine, inhalation of resuspended radionuclides, ingestion of radionuclides from directly contaminated crops, and ingestion of radionuclides via root uptake. This model has been considerably upgraded from the CRAC2 [(2)] model and is based on the COMIDA2 dynamic food chain model [(8)].

The interdiction and decontamination model used with the COMIDA2 food ingestion model was designed to be as close as possible to the original WASH-1400 model as currently implemented in MACCS2. Based on assumptions in NUREG-1150, the limiting value for the Effective Dose Equivalent (EDE) is 0.025 sv (2.5 rem) and the limiting value for the thyroid dose is 0.075 sv (7.5 rem).

Before calculating doses to an individual, the model first determines whether protective actions should be taken, such as land decontamination or prohibiting land use (land interdiction). When calculating population doses in a given area, the model assumes a constant population with respect to time.

Land fractions were given in the Browns Ferry PRA Chapter 9 in Table 9.3-7[(13)] out to 50 miles. Regional maps were inspected and the data were filled in for the grid distances that were not provided on the table. Region indexes and watershed indexes were also estimated by using

regional maps. Crop season and share were taken from Browns Ferry PRA Chapter 9 Table 9.3-8[14].

When better information was not available, the MACCS2 sample problem input was revised using generic economic data that applied to the entire region. Data for several parameters were taken from the BFN-PRA Chapter 9 [14], including per diem living expenses for relocated persons, the cost of farm and non-farm decontamination, the fraction of land devoted to farming and dairy production. The Statistical Abstracts of the United States [6] were used to obtain values for the value of farm and non-farm wealth. Economic data was extrapolated to the year 2016 using two inflation rates for the future, 3% and 7%.

3.6 Evacuation and Other Protective Measures

Evacuation and other protective measures (i.e., sheltering and relocation) are taken to avoid or reduce immediate exposure to the passing radioactive plume and ground contamination. Evacuation is potentially the most effective method of avoiding radiation exposure and can provide essentially total protection if completed prior to arrival of the plume. The assumptions used for evacuation and sheltering are provided in Table 6.

It was assumed that 95% of the people within 10 miles of the plant would evacuate starting two hours after the alarm. All of these people would continue to evacuate until they reached a distance of 20 miles from the plant. The remaining 5% of the people would stay and go about their normal activities. Because they would spend a significant fraction of that time indoors, the shielding factors are higher for these people, although the exposure levels to the plume are higher. The shielding inherent in normally inhabited structures offers some degree of protection against external penetrating radiation from airborne and ground-deposited radionuclides. Furthermore, the exclusion of a significant amount of airborne radioactive material from the interior of a structure, either by natural effects or by certain ventilation strategies, can reduce the amount of inhaled radionuclides as well. The shielding provided by a structure against external penetrating radiation from airborne or surface deposited radionuclides is expressed in terms of a shielding factor which is the ratio of the dose received inside the structure to the dose that would be received outside the structure.

TABLE 6. ASSUMED PROTECTIVE MEASURES

Shielding And Exposure Factors,

Three Values Of Each Protection Factor Are Supplied, One For Each Type Of Activity:
Activity Type:
1 - Evacuees While Moving
2 - Normal Activity In Sheltering And Evacuation Zone
3 - Sheltered Activity

Cloud Shielding Factor

Evacuees	Normal	Shelter
1.	0.75	0.5

Breathing Rate (Cubic Meters Per Second)

2.66E-4	2.66E-4	2.66E-4

Skin Protection Factor

1.0	0.41	0.33

Ground Shielding Factor

0.5	0.33	0.08

Resuspension Inhalation Model Concentration Coefficient (/Meter)
1.E-4
Resuspension Concentration Coefficient Half-Life (Sec)
1.82e5 (2.11 Days)
Last Ring In The Movement Zone = 7 (Evacuees Disappear After Traveling To 20 Miles)
Radial Evacuation Speed (M/S) = .234
Number Of Rings In Shelter And Evacuation Zone = 6
Delay Time To Take Shelter = 7200.
Delay Time To Begin Evacuation = 0.

Shelter And Relocation Zone Data
Duration Of The Emergency Phase (Seconds From Plume Arrival) = 604800. (One Week)
Critical Organ For Relocation Decisions = 'L-Edewbody'
Hot Spot Relocation Time (Seconds From Plume Arrival) 43200. (One-Half Day)
Normal Relocation Time (Seconds From Plume Arrival) 86400. (One Day)
Hot Spot Relocation Dose Criterion Threshold (Sieverts) 0.5 (50 Rem Dose To Whole Body In 1 Week Triggers Relocation)
Normal Relocation Dose Criterion Threshold (Sieverts) 0.25 (25 Rem Dose To Whole Body In 1 Week Triggers Relocation)

4.0 RESULTS

4.1 Health Effects Due To Radiation Doses

The MACCS2 V1.12 code determines the health effects which might occur due to the radiation doses from radioactivity released into the environment during a nuclear reactor accident. Two general categories of health effects are considered; early health effects and latent health effects. Early health effects were not calculated in this analysis. Latent health effects, which might show up at least one year after the radiation doses, include latent cancer fatalities, thyroid effects, and genetic effects. Latent health effects are calculated for the radiation doses received from early exposure and chronic exposure. The health effects models used in MACCS2 V1.12 have changed considerably from the CRAC2 health effects. The revised cancer risk model is now based on BIER V[9].

Latent health effects, expressed as latent cancer fatalities, are calculated for both early exposure and chronic exposure. Latent cancer and total population dose CCDFs for the area within 50 miles from the plant were computed in this study and are provided in Table 7.

4.2 Economic Impact

The economic impact model in MACCS2 V1.12 estimates the direct costs of measures taken to mitigate the public health effects of a reactor accident. The model costs are in 2016 dollars, and the model was run with the two sets of assumptions of the inflation rate after the year 2000; 3% and 7%. The model estimates the cost of evacuation, milk, and crop disposal, decontamination, and land use prohibition (interdiction) that may be required after an accident. CCDFs for the cost impacts associated with accident mitigation within 50 miles from the plant are provided in Table 7, as are the CCDFs for the areas and populations impacted.

The economic models of consequence analysis require several cost elements. Thus, for example, the cost of evacuating a person is assigned a given value, and the total cost of evacuation is merely that figure multiplied by the number of people evacuated. The quantity of each agricultural product condemned is calculated and multiplied by the value of a unit quantity of that product. The economic model is a simple counting and adding routine in which the key factors are the unit costs of each counter-measure.

Hence, the economic model essentially adds the costs incurred for evacuation, relocation, the interdiction of land use, and the destruction of crops. Note that it does not consider the cost of health effects (this would involve assigning a monetary value to life, which would be extremely controversial). It does not consider any economic multiplier effects (e.g., the affect on employment in one area if a factory in another has to close). There is no attempt to incorporate plant costs, although in the prediction of economic risk the contribution of the in-plant property damage far exceeds that of the offsite property damage. As demonstrated by the accident at Three Mile Island, the costs of decontaminating and reconstructing the plant and of replacing power may be several billion dollars even though the offsite consequences may be very small indeed.

TABLE 7. CCDFs FOR POPULATION DOSE, CHRONIC CANCER FATALITIES, AND ECONOMIC IMPACT

Cancer Fatalities	Probability of Exceedence, Latent Cancer Fatalities																
	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+00	1.00E+00	6.93E-01	9.67E-01	7.78E-01	1.00E+00	9.15E-02	4.95E-02	2.49E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	3.33E-01	1.00E+00	7.73E-01
2.00E+00	1.00E+00	2.42E-01	7.36E-01	3.05E-01	1.00E+00	4.08E-04	2.00E-04	2.96E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.02E-01	1.00E+00	3.07E-01
3.00E+00	1.00E+00	1.47E-01	4.52E-01	1.61E-01	9.98E-01			5.26E-05	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.97E-01	9.97E-01	2.06E-02	1.00E+00	1.35E-01
5.00E+00	1.00E+00	4.67E-02	2.09E-01	5.54E-02	9.40E-01				9.96E-01	9.85E-01	1.00E+00	1.00E+00	9.28E-01	9.31E-01	7.42E-04	1.00E+00	2.94E-02
7.00E+00	1.00E+00	8.31E-03	1.26E-01	1.36E-02	8.35E-01				9.62E-01	8.92E-01	1.00E+00	1.00E+00	7.65E-01	7.66E-01		9.95E-01	4.33E-03
1.00E+01	9.92E-01	2.10E-03	5.39E-02	2.02E-03	5.79E-01				8.03E-01	6.36E-01	9.97E-01	9.87E-01	5.14E-01	5.16E-01		9.58E-01	2.00E-04
2.00E+01	6.59E-01		3.01E-06		2.09E-01				3.41E-01	2.28E-01	8.54E-01	5.88E-01	1.08E-01	1.12E-01		5.08E-01	
3.00E+01	3.65E-01				8.33E-02				1.20E-01	5.68E-02	5.62E-01	3.02E-01	5.76E-03	5.84E-03		2.30E-01	
5.00E+01	6.92E-02				3.14E-03				1.61E-03	3.65E-04	2.24E-01	6.99E-02				2.78E-02	
7.00E+01	1.05E-03										1.09E-01	7.20E-03				7.56E-04	
1.00E+02											3.47E-02						
2.00E+02																	
3.00E+02																	
5.00E+02																	
7.00E+02																	
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5.00E+05																	
7.00E+05																	
1.00E+06																	
Mean	2.78E+01	1.78E+00	3.79E+00	1.95E+00	1.44E+01	5.74E-01	3.48E-01	7.97E-01	1.79E+01	1.48E+01	3.96E+01	2.63E+01	1.18E+01	1.18E+01	1.01E+00	2.29E+01	1.84E+00

TABLE 7 (continued)

Population Dose	Probability of Exceedence, Effective Whole Body Population Dose from 0-50 mi, person-rem																
	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+03	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00
2.00E+03	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00
3.00E+03	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00
5.00E+03	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.99E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00
7.00E+03	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.98E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00
1.00E+04	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.93E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00
2.00E+04	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.37E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00
3.00E+04	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.97E-01	8.21E-01	9.99E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00
5.00E+04	1.00E+00	9.98E-01	1.00E+00	9.99E-01	1.00E+00	9.34E-01	5.31E-01	9.90E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.89E-01	1.00E+00	1.00E+00
7.00E+04	1.00E+00	9.88E-01	1.00E+00	9.96E-01	1.00E+00	7.77E-01	3.15E-01	9.16E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.48E-01	1.00E+00	9.97E-01
1.00E+05	1.00E+00	9.65E-01	9.96E-01	9.79E-01	1.00E+00	4.96E-01	1.74E-01	6.89E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	8.07E-01	1.00E+00	9.90E-01
2.00E+05	1.00E+00	6.93E-01	9.67E-01	7.78E-01	1.00E+00	9.15E-02	4.95E-02	2.49E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	3.33E-01	1.00E+00	7.73E-01
3.00E+05	1.00E+00	4.04E-01	8.84E-01	4.83E-01	1.00E+00	1.15E-02	6.16E-03	1.01E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.93E-01	1.00E+00	4.84E-01
5.00E+05	1.00E+00	1.85E-01	5.66E-01	2.11E-01	1.00E+00			7.09E-03	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.99E-01	9.99E-01	5.01E-02	1.00E+00	2.09E-01
7.00E+05	1.00E+00	1.15E-01	3.58E-01	1.25E-01	9.93E-01			2.03E-05	1.00E+00	9.99E-01	1.00E+00	1.00E+00	9.90E-01	9.90E-01	7.93E-03	1.00E+00	8.97E-02
1.00E+06	1.00E+00	4.67E-02	2.09E-01	5.54E-02	9.40E-01				9.96E-01	9.85E-01	1.00E+00	1.00E+00	9.28E-01	9.31E-01	7.42E-04	1.00E+00	2.94E-02
2.00E+06	9.92E-01	2.10E-03	5.39E-02	2.02E-03	5.79E-01				8.03E-01	6.36E-01	9.97E-01	9.87E-01	5.14E-01	5.16E-01		9.58E-01	2.00E-04
3.00E+06	8.68E-01	1.17E-05	7.47E-03	3.01E-06	3.34E-01				5.21E-01	3.90E-01	9.59E-01	8.43E-01	2.59E-01	2.63E-01		7.32E-01	
5.00E+06	4.87E-01				1.23E-01				2.13E-01	1.14E-01	7.03E-01	4.32E-01	3.74E-02	3.73E-02		3.47E-01	
7.00E+06	2.72E-01				5.06E-02				5.70E-02	2.79E-02	4.52E-01	2.03E-01	3.71E-04	3.71E-04		1.43E-01	
1.00E+07	6.92E-02				3.14E-03				1.61E-03	3.65E-04	2.24E-01	6.99E-02				2.78E-02	
2.00E+07											3.47E-02						
3.00E+07											1.36E-03						
5.00E+07																	
7.00E+07																	
1.00E+08																	
2.00E+08																	
3.00E+08																	
5.00E+08																	
7.00E+08																	
1.00E+09																	
Mean	5.56E+06	3.56E+05	7.57E+05	3.91E+05	2.88E+06	1.15E+05	6.96E+04	1.59E+05	3.59E+06	2.96E+06	7.91E+06	5.27E+06	2.35E+06	2.36E+06	2.02E+05	4.59E+06	3.69E+05

TABLE 7 (continued)

Economic Cost ($)	Probability of Exceedence, Total Economic Cost (2016 Dollars, Assuming 3% Inflation Rate)																
	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+06	1.00E+00	9.95E-01	1.00E+00	9.99E-01	1.00E+00	9.43E-01	8.27E-01	9.88E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.76E-01	1.00E+00	9.98E-01
2.00E+06	1.00E+00	9.91E-01	1.00E+00	9.98E-01	1.00E+00	9.10E-01	7.71E-01	9.85E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.42E-01	1.00E+00	9.97E-01
3.00E+06	1.00E+00	9.87E-01	1.00E+00	9.97E-01	1.00E+00	8.67E-01	7.01E-01	9.72E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.09E-01	1.00E+00	9.96E-01
5.00E+06	1.00E+00	9.75E-01	1.00E+00	9.93E-01	1.00E+00	7.89E-01	6.09E-01	9.61E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	8.64E-01	1.00E+00	9.92E-01
7.00E+06	1.00E+00	9.67E-01	1.00E+00	9.85E-01	1.00E+00	7.09E-01	5.29E-01	9.43E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	8.36E-01	1.00E+00	9.87E-01
1.00E+07	1.00E+00	9.54E-01	1.00E+00	9.80E-01	1.00E+00	5.95E-01	4.52E-01	9.14E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	7.90E-01	1.00E+00	9.77E-01
2.00E+07	1.00E+00	8.86E-01	9.99E-01	9.38E-01	1.00E+00	3.27E-01	2.19E-01	7.70E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	5.85E-01	1.00E+00	9.34E-01
3.00E+07	1.00E+00	8.17E-01	9.94E-01	8.99E-01	1.00E+00	1.90E-01	1.53E-01	6.59E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	4.75E-01	1.00E+00	8.95E-01
5.00E+07	1.00E+00	6.69E-01	9.82E-01	7.74E-01	1.00E+00	1.65E-02	1.80E-02	4.59E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	3.34E-01	1.00E+00	7.82E-01
7.00E+07	1.00E+00	5.75E-01	9.63E-01	6.76E-01	1.00E+00	9.22E-04	1.72E-02	3.25E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	2.73E-01	1.00E+00	6.70E-01
1.00E+08	1.00E+00	4.95E-01	9.24E-01	5.73E-01	1.00E+00		8.77E-03	2.53E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	2.18E-01	1.00E+00	5.68E-01
2.00E+08	1.00E+00	1.93E-01	8.06E-01	2.81E-01	1.00E+00		1.18E-03	5.04E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	5.42E-02	1.00E+00	2.29E-01
3.00E+08	1.00E+00	1.06E-01	6.99E-01	1.45E-01	1.00E+00		1.18E-03	3.31E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	2.75E-02	1.00E+00	1.24E-01
5.00E+08	1.00E+00	2.86E-02	4.51E-01	4.07E-02	1.00E+00			1.85E-03	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.98E-01	9.98E-01		1.00E+00	2.62E-02
7.00E+08	1.00E+00	1.72E-02	2.85E-01	2.66E-02	9.99E-01			6.27E-05	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.89E-01	9.89E-01		1.00E+00	1.59E-02
1.00E+09	1.00E+00	7.86E-03	1.69E-01	1.40E-02	9.97E-01			4.04E-05	1.00E+00	9.99E-01	1.00E+00	1.00E+00	9.71E-01	9.71E-01		1.00E+00	6.73E-03
2.00E+09	1.00E+00	7.20E-05	6.77E-02	3.25E-04	9.57E-01				9.98E-01	9.67E-01	1.00E+00	1.00E+00	7.53E-01	7.55E-01		9.92E-01	
3.00E+09	9.95E-01	4.97E-05	3.94E-02	1.60E-04	8.72E-01				9.66E-01	8.52E-01	9.99E-01	9.93E-01	4.71E-01	4.68E-01		9.59E-01	
5.00E+09	8.96E-01		6.34E-03		5.38E-01				6.66E-01	4.75E-01	9.31E-01	8.38E-01	2.29E-01	2.29E-01		7.25E-01	
7.00E+09	6.69E-01				3.69E-01				4.61E-01	3.23E-01	7.10E-01	5.87E-01	1.07E-01	1.08E-01		4.82E-01	
1.00E+10	4.55E-01				2.45E-01				2.93E-01	1.86E-01	4.84E-01	3.62E-01	3.27E-02	3.10E-02		3.03E-01	
2.00E+10	9.90E-02				4.87E-02				1.33E-02	2.86E-03	9.30E-02	8.68E-02				5.13E-02	
3.00E+10	1.55E-02				5.50E-03					8.29E-05	3.10E-03	2.02E-02				7.89E-03	
5.00E+10	3.69E-05											3.01E-06					
7.00E+10																	
1.00E+11																	
2.00E+11																	
3.00E+11																	
5.00E+11																	
7.00E+11																	
1.00E+12																	
Mean	1.12E+10	1.37E+08	6.97E+08	1.71E+08	7.57E+09	1.67E+07	1.37E+07	6.98E+07	7.90E+09	6.32E+09	1.14E+10	1.02E+10	3.72E+09	3.72E+09	5.76E+07	8.75E+09	1.54E+08

TABLE 7 (continued)

Economic Cost ($)	Probability of Exceedence, Total Economic Cost (2016 Dollars, Assuming 7% Inflation Rate)																
	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+06	1.00E+00	9.98E-01	1.00E+00	1.00E+00	1.00E+00	9.65E-01	8.66E-01	9.95E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.87E-01	1.00E+00	9.99E-01
2.00E+06	1.00E+00	9.95E-01	1.00E+00	9.99E-01	1.00E+00	9.41E-01	8.23E-01	9.87E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.75E-01	1.00E+00	9.98E-01
3.00E+06	1.00E+00	9.91E-01	1.00E+00	9.99E-01	1.00E+00	9.22E-01	7.83E-01	9.86E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.54E-01	1.00E+00	9.98E-01
5.00E+06	1.00E+00	9.88E-01	1.00E+00	9.97E-01	1.00E+00	8.75E-01	7.12E-01	9.77E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.16E-01	1.00E+00	9.97E-01
7.00E+06	1.00E+00	9.82E-01	1.00E+00	9.95E-01	1.00E+00	8.43E-01	6.56E-01	9.68E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	8.94E-01	1.00E+00	9.94E-01
1.00E+07	1.00E+00	9.74E-01	1.00E+00	9.91E-01	1.00E+00	7.67E-01	5.88E-01	9.59E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	8.60E-01	1.00E+00	9.92E-01
2.00E+07	1.00E+00	9.48E-01	1.00E+00	9.77E-01	1.00E+00	5.70E-01	4.20E-01	9.04E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	7.77E-01	1.00E+00	9.72E-01
3.00E+07	1.00E+00	9.03E-01	1.00E+00	9.48E-01	1.00E+00	4.00E-01	2.58E-01	8.23E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	6.50E-01	1.00E+00	9.52E-01
5.00E+07	1.00E+00	8.39E-01	9.94E-01	9.10E-01	1.00E+00	2.37E-01	1.77E-01	6.86E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	4.98E-01	1.00E+00	9.09E-01
7.00E+07	1.00E+00	7.65E-01	9.91E-01	8.64E-01	1.00E+00	8.42E-02	6.87E-02	5.82E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	4.18E-01	1.00E+00	8.51E-01
1.00E+08	1.00E+00	6.38E-01	9.75E-01	7.57E-01	1.00E+00	8.70E-03	1.74E-02	4.21E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	3.10E-01	1.00E+00	7.58E-01
2.00E+08	1.00E+00	4.45E-01	9.14E-01	5.36E-01	1.00E+00		4.75E-03	2.22E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.84E-01	1.00E+00	5.38E-01
3.00E+08	1.00E+00	2.84E-01	8.46E-01	3.63E-01	1.00E+00		2.06E-03	7.70E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	8.88E-02	1.00E+00	3.28E-01
5.00E+08	1.00E+00	1.19E-01	7.24E-01	1.65E-01	1.00E+00		1.18E-03	3.51E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	2.75E-02	1.00E+00	1.40E-01
7.00E+08	1.00E+00	4.20E-02	5.95E-01	7.12E-02	1.00E+00			6.28E-03	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00		1.00E+00	5.64E-02
1.00E+09	1.00E+00	2.85E-02	4.06E-01	3.72E-02	9.99E-01			7.46E-05	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.98E-01	9.98E-01		1.00E+00	2.25E-02
2.00E+09	1.00E+00	6.33E-03	1.56E-01	1.20E-02	9.97E-01				1.00E+00	9.99E-01	1.00E+00	1.00E+00	9.67E-01	9.67E-01		1.00E+00	4.88E-03
3.00E+09	1.00E+00	7.20E-05	8.88E-02	5.55E-04	9.75E-01				1.00E+00	9.86E-01	1.00E+00	1.00E+00	8.65E-01	8.65E-01		9.99E-01	
5.00E+09	9.98E-01	4.97E-05	4.16E-02	1.60E-04	9.09E-01				9.79E-01	9.00E-01	1.00E+00	9.96E-01	5.38E-01	5.34E-01		9.76E-01	
7.00E+09	9.78E-01		1.25E-02		7.35E-01				8.73E-01	6.85E-01	9.90E-01	9.59E-01	3.50E-01	3.52E-01		8.73E-01	
1.00E+10	8.60E-01		6.34E-03		4.88E-01				6.05E-01	4.31E-01	8.96E-01	7.81E-01	1.88E-01	1.87E-01		6.53E-01	
2.00E+10	4.18E-01				2.18E-01				2.45E-01	1.50E-01	4.39E-01	3.15E-01	2.42E-02	2.20E-02		2.57E-01	
3.00E+10	1.87E-01				8.34E-02				4.53E-02	2.63E-02	1.94E-01	1.41E-01	1.66E-05	1.66E-05		1.12E-01	
5.00E+10	2.91E-02				1.10E-02				3.17E-04	2.81E-04	1.38E-02	3.25E-02				1.26E-02	
7.00E+10	2.81E-03				1.11E-03						8.39E-05	4.31E-03				1.88E-03	
1.00E+11																	
2.00E+11																	
3.00E+11																	
5.00E+11																	
7.00E+11																	
1.00E+12																	
Mean	2.06E+10	2.51E+08	1.28E+09	3.14E+08	1.39E+10	3.06E+07	2.52E+07	1.28E+08	1.45E+10	1.16E+10	2.09E+10	1.87E+10	6.84E+09	6.84E+09	1.06E+08	1.61E+10	2.83E+08

TABLE 7 (continued)

Economic Cost ($)	Probability of Exceedence, Population Dependent Cost (2016 Dollars, Assuming 3% Inflation Rate)																
	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+06	1.00E+00	9.86E-01	1.00E+00	9.94E-01	1.00E+00	9.26E-01	7.90E-01	9.82E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.56E-01	1.00E+00	9.94E-01
2.00E+06	1.00E+00	9.83E-01	1.00E+00	9.92E-01	1.00E+00	8.80E-01	7.28E-01	9.81E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.17E-01	1.00E+00	9.93E-01
3.00E+06	1.00E+00	9.77E-01	1.00E+00	9.87E-01	1.00E+00	8.13E-01	6.39E-01	9.64E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	8.82E-01	1.00E+00	9.90E-01
5.00E+06	1.00E+00	9.63E-01	9.99E-01	9.81E-01	1.00E+00	7.48E-01	5.86E-01	9.48E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	8.45E-01	1.00E+00	9.82E-01
7.00E+06	1.00E+00	9.51E-01	9.99E-01	9.75E-01	1.00E+00	6.57E-01	4.82E-01	9.26E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	8.16E-01	1.00E+00	9.77E-01
1.00E+07	1.00E+00	9.39E-01	9.97E-01	9.66E-01	1.00E+00	5.48E-01	4.18E-01	8.91E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	7.65E-01	1.00E+00	9.68E-01
2.00E+07	1.00E+00	8.52E-01	9.90E-01	9.10E-01	1.00E+00	2.98E-01	2.13E-01	7.19E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	5.38E-01	1.00E+00	9.10E-01
3.00E+07	1.00E+00	7.69E-01	9.84E-01	8.64E-01	1.00E+00	1.65E-01	1.29E-01	6.22E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	4.53E-01	1.00E+00	8.58E-01
5.00E+07	1.00E+00	6.29E-01	9.64E-01	7.43E-01	1.00E+00	1.05E-02	1.76E-02	4.17E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	3.10E-01	1.00E+00	7.46E-01
7.00E+07	1.00E+00	5.49E-01	9.41E-01	6.31E-01	1.00E+00		1.57E-02	3.08E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	2.71E-01	1.00E+00	6.28E-01
1.00E+08	1.00E+00	4.87E-01	9.03E-01	5.60E-01	1.00E+00		7.17E-03	2.33E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	2.02E-01	1.00E+00	5.53E-01
2.00E+08	1.00E+00	1.80E-01	7.88E-01	2.59E-01	1.00E+00		1.18E-03	4.83E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	4.89E-02	1.00E+00	2.15E-01
3.00E+08	1.00E+00	9.98E-02	6.83E-01	1.35E-01	1.00E+00		1.18E-03	3.30E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	2.75E-02	1.00E+00	1.17E-01
5.00E+08	1.00E+00	2.86E-02	4.30E-01	4.01E-02	9.99E-01			1.84E-03	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.98E-01	9.98E-01		1.00E+00	2.44E-02
7.00E+08	1.00E+00	1.71E-02	2.68E-01	2.65E-02	9.99E-01			6.27E-05	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.84E-01	9.84E-01		1.00E+00	1.51E-02
1.00E+09	1.00E+00	7.84E-03	1.61E-01	1.36E-02	9.97E-01			1.19E-05	1.00E+00	9.99E-01	1.00E+00	1.00E+00	9.67E-01	9.67E-01		1.00E+00	6.26E-03
2.00E+09	1.00E+00	7.20E-05	6.76E-02	3.25E-04	9.52E-01				9.97E-01	9.63E-01	1.00E+00	9.99E-01	7.25E-01	7.27E-01		9.92E-01	
3.00E+09	9.94E-01	4.97E-05	3.87E-02	1.60E-04	8.56E-01				9.55E-01	8.24E-01	9.99E-01	9.90E-01	4.53E-01	4.51E-01		9.45E-01	
5.00E+09	8.83E-01		6.34E-03		5.21E-01				6.39E-01	4.64E-01	9.14E-01	8.17E-01	2.16E-01	2.16E-01		6.97E-01	
7.00E+09	6.45E-01				3.58E-01				4.50E-01	3.15E-01	6.82E-01	5.71E-01	1.03E-01	1.03E-01		4.58E-01	
1.00E+10	4.43E-01				2.40E-01				2.82E-01	1.81E-01	4.71E-01	3.49E-01	3.14E-02	2.98E-02		2.93E-01	
2.00E+10	9.57E-02				4.73E-02				1.03E-02	2.29E-03	8.79E-02	8.23E-02				5.11E-02	
3.00E+10	1.50E-02				5.50E-03					7.99E-05	2.84E-03	1.62E-02				7.71E-03	
5.00E+10	3.39E-05																
7.00E+10																	
1.00E+11																	
2.00E+11																	
3.00E+11																	
5.00E+11																	
7.00E+11																	
1.00E+12																	
Mean	1.10E+10	1.30E+08	6.73E+08	1.62E+08	7.43E+09	1.52E+07	1.27E+07	6.58E+07	7.72E+09	6.18E+09	1.11E+10	9.99E+09	3.62E+09	3.62E+09	5.49E+07	8.57E+09	1.46E+08

TABLE 7 (continued)

Economic Cost ($)	Probability of Exceedence, Population Dependent Cost (2016 Dollars, Assuming 7% Inflation Rate)																
	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+06	1.00E+00	9.90E-01	1.00E+00	9.98E-01	1.00E+00	9.51E-01	8.24E-01	9.89E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.75E-01	1.00E+00	9.99E-01
2.00E+06	1.00E+00	9.86E-01	1.00E+00	9.94E-01	1.00E+00	9.21E-01	7.90E-01	9.82E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.54E-01	1.00E+00	9.94E-01
3.00E+06	1.00E+00	9.84E-01	1.00E+00	9.92E-01	1.00E+00	8.98E-01	7.58E-01	9.81E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.30E-01	1.00E+00	9.94E-01
5.00E+06	1.00E+00	9.78E-01	1.00E+00	9.88E-01	1.00E+00	8.26E-01	6.57E-01	9.66E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	8.86E-01	1.00E+00	9.91E-01
7.00E+06	1.00E+00	9.67E-01	1.00E+00	9.86E-01	1.00E+00	7.89E-01	6.09E-01	9.56E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	8.63E-01	1.00E+00	9.86E-01
1.00E+07	1.00E+00	9.60E-01	9.99E-01	9.79E-01	1.00E+00	7.25E-01	5.44E-01	9.46E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	8.40E-01	1.00E+00	9.82E-01
2.00E+07	1.00E+00	9.34E-01	9.97E-01	9.62E-01	1.00E+00	5.20E-01	3.85E-01	8.76E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	7.40E-01	1.00E+00	9.64E-01
3.00E+07	1.00E+00	8.82E-01	9.94E-01	9.30E-01	1.00E+00	3.68E-01	2.45E-01	7.77E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	5.97E-01	1.00E+00	9.31E-01
5.00E+07	1.00E+00	8.00E-01	9.85E-01	8.78E-01	1.00E+00	2.10E-01	1.71E-01	6.45E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	4.79E-01	1.00E+00	8.73E-01
7.00E+07	1.00E+00	7.26E-01	9.78E-01	8.14E-01	1.00E+00	6.80E-02	5.72E-02	5.47E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	3.99E-01	1.00E+00	8.18E-01
1.00E+08	1.00E+00	5.96E-01	9.56E-01	7.15E-01	1.00E+00	7.16E-03	1.74E-02	3.76E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	2.92E-01	1.00E+00	7.14E-01
2.00E+08	1.00E+00	4.08E-01	8.99E-01	5.10E-01	1.00E+00		4.56E-03	2.01E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.72E-01	1.00E+00	5.06E-01
3.00E+08	1.00E+00	2.62E-01	8.23E-01	3.48E-01	1.00E+00		2.06E-03	7.49E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	8.88E-02	1.00E+00	2.95E-01
5.00E+08	1.00E+00	1.16E-01	7.05E-01	1.60E-01	1.00E+00		1.18E-03	3.42E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	2.75E-02	1.00E+00	1.34E-01
7.00E+08	1.00E+00	3.87E-02	5.70E-01	6.36E-02	1.00E+00			5.19E-03	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00		1.00E+00	4.87E-02
1.00E+09	1.00E+00	2.84E-02	3.59E-01	3.69E-02	9.99E-01			6.81E-05	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.98E-01	9.98E-01		1.00E+00	2.23E-02
2.00E+09	1.00E+00	6.33E-03	1.54E-01	1.20E-02	9.96E-01				1.00E+00	9.97E-01	1.00E+00	1.00E+00	9.56E-01	9.56E-01		1.00E+00	4.88E-03
3.00E+09	1.00E+00	7.20E-05	8.88E-02	5.28E-04	9.73E-01				1.00E+00	9.81E-01	1.00E+00	1.00E+00	8.42E-01	8.42E-01		9.98E-01	
5.00E+09	9.97E-01	4.97E-05	4.10E-02	1.60E-04	8.94E-01				9.74E-01	8.82E-01	9.99E-01	9.95E-01	5.12E-01	5.11E-01		9.70E-01	
7.00E+09	9.68E-01		1.03E-02		7.12E-01				8.46E-01	6.48E-01	9.87E-01	9.46E-01	3.36E-01	3.39E-01		8.51E-01	
1.00E+10	8.29E-01		6.34E-03		4.79E-01				5.81E-01	4.18E-01	8.74E-01	7.59E-01	1.83E-01	1.82E-01		6.28E-01	
2.00E+10	4.08E-01				2.15E-01				2.34E-01	1.45E-01	4.30E-01	3.07E-01	2.15E-02	2.02E-02		2.53E-01	
3.00E+10	1.78E-01				8.15E-02				4.38E-02	2.35E-02	1.85E-01	1.38E-01				1.05E-01	
5.00E+10	2.64E-02				1.10E-02				3.17E-04	2.02E-04	1.36E-02	3.15E-02				1.21E-02	
7.00E+10	2.37E-03				1.11E-03						8.39E-05	3.55E-03				1.88E-03	
1.00E+11																	
2.00E+11																	
3.00E+11																	
5.00E+11																	
7.00E+11																	
1.00E+12																	
Mean	2.02E+10	2.39E+08	1.24E+09	2.98E+08	1.37E+10	2.80E+07	2.34E+07	1.21E+08	1.42E+10	1.14E+10	2.05E+10	1.84E+10	6.66E+09	6.66E+09	1.01E+08	1.58E+10	2.68E+08

TABLE 7 (continued)

Economic	Probability of Exceedence, Farm Dependent Cost (2016 Dollars, Assuming 3% Inflation Rate)																
Cost ($)	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+06	1.00E+00	8.34E-01	9.96E-01	9.18E-01	1.00E+00	5.08E-01	3.62E-01	7.16E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	6.16E-01	1.00E+00	9.03E-01
2.00E+06	1.00E+00	6.19E-01	9.80E-01	7.45E-01	1.00E+00	3.39E-01	1.27E-01	5.30E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	4.20E-01	1.00E+00	6.99E-01
3.00E+06	1.00E+00	5.11E-01	9.45E-01	6.40E-01	1.00E+00	1.22E-01	3.81E-02	4.56E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	3.28E-01	1.00E+00	5.94E-01
5.00E+06	1.00E+00	4.12E-01	8.72E-01	5.08E-01	1.00E+00	5.25E-03	2.81E-02	3.56E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.83E-01	1.00E+00	4.96E-01
7.00E+06	1.00E+00	3.69E-01	7.49E-01	4.48E-01	1.00E+00	1.55E-03	1.11E-03	2.51E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.28E-01	1.00E+00	4.36E-01
1.00E+07	1.00E+00	2.01E-01	6.84E-01	3.18E-01	1.00E+00			7.73E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.22E-02	1.00E+00	3.19E-01
2.00E+07	1.00E+00	7.67E-02	4.11E-01	1.08E-01	1.00E+00			1.32E-04	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.91E-01	9.91E-01		1.00E+00	1.17E-01
3.00E+07	1.00E+00	1.58E-02	2.93E-01	4.09E-02	9.90E-01				1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.62E-01	9.62E-01		1.00E+00	1.89E-02
5.00E+07	1.00E+00		1.55E-01	2.63E-04	9.65E-01				9.99E-01	9.80E-01	1.00E+00	1.00E+00	8.34E-01	8.34E-01		9.99E-01	
7.00E+07	9.99E-01		7.29E-03		9.18E-01				9.94E-01	9.26E-01	1.00E+00	9.95E-01	6.32E-01	6.31E-01		9.82E-01	
1.00E+08	9.77E-01				7.66E-01				9.22E-01	8.01E-01	9.96E-01	9.41E-01	4.32E-01	4.31E-01		8.90E-01	
2.00E+08	5.74E-01				1.40E-01				3.48E-01	1.49E-01	6.47E-01	4.27E-01	3.34E-02	3.26E-02		3.46E-01	
3.00E+08	1.70E-01				1.51E-02				4.46E-02	5.51E-03	2.03E-01	7.44E-02	2.07E-04	2.07E-04		8.24E-02	
5.00E+08	1.66E-03										3.32E-03						
7.00E+08																	
1.00E+09																	
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3.00E+11																	
5.00E+11																	
7.00E+11																	
1.00E+12																	
Mean	2.28E+08	6.67E+06	2.35E+07	8.81E+06	1.41E+08	1.41E+06	9.48E+05	4.06E+06	1.81E+08	1.42E+08	2.38E+08	1.97E+08	9.73E+07	9.72E+07	2.65E+06	1.83E+08	8.25E+06

TABLE 7 (continued)

Economic	Probability of Exceedence, Farm Dependent Cost (2016 Dollars, Assuming 7% Inflation Rate)																
Cost ($)	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+06	1.00E+00	9.39E-01	9.99E-01	9.76E-01	1.00E+00	5.75E-01	4.50E-01	8.66E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	7.64E-01	1.00E+00	9.78E-01
2.00E+06	1.00E+00	8.09E-01	9.95E-01	9.08E-01	1.00E+00	5.00E-01	3.41E-01	6.92E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	5.94E-01	1.00E+00	8.92E-01
3.00E+06	1.00E+00	6.70E-01	9.87E-01	8.02E-01	1.00E+00	4.20E-01	2.44E-01	5.68E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	4.51E-01	1.00E+00	7.58E-01
5.00E+06	1.00E+00	5.36E-01	9.58E-01	6.79E-01	1.00E+00	1.82E-01	4.22E-02	4.79E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	3.56E-01	1.00E+00	6.16E-01
7.00E+06	1.00E+00	4.58E-01	9.24E-01	5.75E-01	1.00E+00	3.93E-02	3.37E-02	3.92E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	2.44E-01	1.00E+00	5.52E-01
1.00E+07	1.00E+00	4.04E-01	8.35E-01	4.88E-01	1.00E+00	3.11E-03	1.78E-02	3.42E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.74E-01	1.00E+00	4.80E-01
2.00E+07	1.00E+00	1.95E-01	6.62E-01	2.85E-01	1.00E+00			7.05E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	8.49E-03	1.00E+00	2.89E-01
3.00E+07	1.00E+00	1.33E-01	5.23E-01	2.11E-01	1.00E+00			3.11E-03	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.96E-01	9.96E-01	1.98E-03	1.00E+00	1.74E-01
5.00E+07	1.00E+00	3.19E-02	3.23E-01	6.71E-02	9.97E-01				1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.75E-01	9.75E-01		1.00E+00	3.66E-02
7.00E+07	1.00E+00	6.06E-04	2.61E-01	5.37E-03	9.75E-01				1.00E+00	9.98E-01	1.00E+00	1.00E+00	9.19E-01	9.20E-01		1.00E+00	2.43E-03
1.00E+08	1.00E+00		1.07E-01		9.62E-01				9.98E-01	9.65E-01	1.00E+00	9.99E-01	7.94E-01	7.98E-01		9.96E-01	
2.00E+08	9.61E-01				7.14E-01				8.73E-01	7.25E-01	9.92E-01	9.22E-01	3.83E-01	3.83E-01		8.58E-01	
3.00E+08	7.83E-01				2.94E-01				5.34E-01	3.09E-01	8.45E-01	6.30E-01	1.07E-01	1.06E-01		5.33E-01	
5.00E+08	2.39E-01				2.47E-02				1.06E-01	1.66E-02	3.01E-01	1.48E-01	6.28E-04	6.28E-04		1.43E-01	
7.00E+08	6.15E-02				2.96E-05						4.61E-02	9.39E-03				3.36E-03	
1.00E+09											7.50E-04						
2.00E+09																	
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2.00E+11																	
3.00E+11																	
5.00E+11																	
7.00E+11																	
1.00E+12																	
Mean	4.19E+08	1.23E+07	4.32E+07	1.62E+07	2.59E+08	2.59E+06	1.74E+06	7.47E+06	3.33E+08	2.62E+08	4.37E+08	3.62E+08	1.79E+08	1.79E+08	4.88E+06	3.37E+08	1.52E+07

TABLE 7 (continued)

Economic	Probability of Exceedence, Population-Dependent Decontamination Cost (2016 Dollars, Assuming 3% Inflation Rate)																
Cost ($)	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+06	1.00E+00	9.76E-01	1.00E+00	9.88E-01	1.00E+00	8.11E-01	6.57E-01	9.62E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	8.79E-01	1.00E+00	9.91E-01
2.00E+06	1.00E+00	9.55E-01	9.99E-01	9.76E-01	1.00E+00	6.79E-01	5.16E-01	9.36E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	8.25E-01	1.00E+00	9.81E-01
3.00E+06	1.00E+00	9.40E-01	9.97E-01	9.69E-01	1.00E+00	5.65E-01	4.30E-01	8.95E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	7.68E-01	1.00E+00	9.69E-01
5.00E+06	1.00E+00	8.82E-01	9.93E-01	9.36E-01	1.00E+00	3.74E-01	2.48E-01	7.99E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	6.35E-01	1.00E+00	9.43E-01
7.00E+06	1.00E+00	8.13E-01	9.86E-01	8.92E-01	1.00E+00	2.67E-01	1.93E-01	7.05E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	5.29E-01	1.00E+00	8.97E-01
1.00E+07	1.00E+00	7.50E-01	9.79E-01	8.41E-01	1.00E+00	1.75E-01	1.38E-01	6.11E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	4.53E-01	1.00E+00	8.48E-01
2.00E+07	1.00E+00	5.71E-01	9.38E-01	6.67E-01	1.00E+00	2.56E-03	1.73E-02	3.48E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	2.76E-01	1.00E+00	6.71E-01
3.00E+07	1.00E+00	5.04E-01	8.87E-01	5.81E-01	1.00E+00		8.61E-03	2.50E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	2.21E-01	1.00E+00	5.74E-01
5.00E+07	1.00E+00	2.54E-01	8.04E-01	3.27E-01	1.00E+00		1.55E-03	6.32E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	6.40E-02	1.00E+00	2.75E-01
7.00E+07	1.00E+00	1.69E-01	7.64E-01	2.47E-01	1.00E+00		1.18E-03	3.60E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	2.87E-02	1.00E+00	1.86E-01
1.00E+08	1.00E+00	6.20E-02	6.17E-01	1.02E-01	9.97E-01			1.44E-02	1.00E+00	9.99E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	3.92E-03	1.00E+00	8.91E-02
2.00E+08	1.00E+00	2.72E-02	3.00E-01	3.54E-02	9.77E-01			6.27E-05	9.99E-01	9.96E-01	1.00E+00	1.00E+00	9.83E-01	9.83E-01		9.99E-01	2.00E-02
3.00E+08	1.00E+00	6.37E-03	1.87E-01	1.27E-02	9.54E-01			1.19E-05	9.99E-01	9.90E-01	1.00E+00	9.97E-01	9.59E-01	9.59E-01		9.97E-01	5.45E-03
5.00E+08	9.94E-01	7.20E-05	9.07E-02	5.03E-04	8.67E-01				9.95E-01	9.56E-01	1.00E+00	9.88E-01	8.25E-01	8.25E-01		9.74E-01	
7.00E+08	9.78E-01	4.97E-05	6.81E-02	1.65E-04	7.84E-01				9.68E-01	8.64E-01	9.96E-01	9.66E-01	6.41E-01	6.37E-01		9.22E-01	
1.00E+09	9.23E-01		3.71E-02		6.35E-01				8.78E-01	6.89E-01	9.78E-01	8.82E-01	4.41E-01	4.39E-01		7.99E-01	
2.00E+09	5.99E-01				3.04E-01				4.72E-01	3.25E-01	6.99E-01	5.08E-01	1.39E-01	1.41E-01		4.26E-01	
3.00E+09	3.66E-01				1.62E-01				2.71E-01	1.61E-01	4.41E-01	2.75E-01	6.14E-02	5.88E-02		2.32E-01	
5.00E+09	1.41E-01				5.21E-02				7.35E-02	3.63E-02	1.78E-01	9.24E-02	6.40E-03	6.40E-03		7.74E-02	
7.00E+09	3.31E-02				9.10E-03				9.64E-03	2.68E-03	5.54E-02	1.67E-02				1.05E-02	
1.00E+10	3.39E-04										1.41E-04						
2.00E+10																	
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3.00E+11																	
5.00E+11																	
7.00E+11																	
1.00E+12																	
Mean	2.88E+09	4.20E+07	2.16E+08	5.25E+07	1.77E+09	5.04E+06	4.16E+06	2.05E+07	2.37E+09	1.82E+09	3.27E+09	2.48E+09	1.19E+09	1.18E+09	1.68E+07	2.22E+09	4.60E+07

TABLE 7 (continued)

Economic Cost ($)	Probability of Exceedence, Population-Dependent Decontamination Cost (2016 Dollars, Assuming 7% Inflation Rate)																
	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+06	1.00E+00	9.84E-01	1.00E+00	9.92E-01	1.00E+00	8.92E-01	7.55E-01	9.81E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.26E-01	1.00E+00	9.93E-01
2.00E+06	1.00E+00	9.73E-01	1.00E+00	9.86E-01	1.00E+00	8.01E-01	6.33E-01	9.60E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	8.73E-01	1.00E+00	9.87E-01
3.00E+06	1.00E+00	9.60E-01	9.99E-01	9.81E-01	1.00E+00	7.25E-01	5.54E-01	9.44E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	8.42E-01	1.00E+00	9.83E-01
5.00E+06	1.00E+00	9.44E-01	9.98E-01	9.70E-01	1.00E+00	5.89E-01	4.58E-01	9.07E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	7.87E-01	1.00E+00	9.71E-01
7.00E+06	1.00E+00	9.28E-01	9.95E-01	9.62E-01	1.00E+00	4.77E-01	3.52E-01	8.64E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	7.26E-01	1.00E+00	9.63E-01
1.00E+07	1.00E+00	8.59E-01	9.93E-01	9.21E-01	1.00E+00	3.41E-01	2.38E-01	7.77E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	5.99E-01	1.00E+00	9.32E-01
2.00E+07	1.00E+00	7.43E-01	9.76E-01	8.30E-01	1.00E+00	1.44E-01	1.16E-01	5.90E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	4.32E-01	1.00E+00	8.34E-01
3.00E+07	1.00E+00	6.18E-01	9.47E-01	7.29E-01	1.00E+00	2.35E-02	1.86E-02	4.28E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	3.11E-01	1.00E+00	7.42E-01
5.00E+07	1.00E+00	5.32E-01	9.07E-01	6.01E-01	1.00E+00		1.51E-02	2.83E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	2.53E-01	1.00E+00	5.97E-01
7.00E+07	1.00E+00	3.32E-01	8.51E-01	4.48E-01	1.00E+00		2.06E-03	1.38E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.21E-01	1.00E+00	4.32E-01
1.00E+08	1.00E+00	2.48E-01	7.96E-01	3.12E-01	1.00E+00		1.51E-03	5.65E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	5.99E-02	1.00E+00	2.50E-01
2.00E+08	1.00E+00	5.33E-02	5.83E-01	8.46E-02	9.96E-01			4.83E-03	1.00E+00	9.99E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00		1.00E+00	6.42E-02
3.00E+08	1.00E+00	2.85E-02	3.90E-01	3.87E-02	9.92E-01			6.81E-05	1.00E+00	9.98E-01	1.00E+00	1.00E+00	9.93E-01	9.93E-01		1.00E+00	2.29E-02
5.00E+08	1.00E+00	1.26E-02	2.35E-01	2.19E-02	9.65E-01			4.04E-05	9.99E-01	9.93E-01	1.00E+00	1.00E+00	9.67E-01	9.67E-01		9.97E-01	1.18E-02
7.00E+08	9.98E-01	4.93E-03	1.28E-01	8.93E-03	9.16E-01				9.98E-01	9.79E-01	1.00E+00	9.94E-01	9.24E-01	9.25E-01		9.92E-01	3.54E-03
1.00E+09	9.92E-01	7.20E-05	8.38E-02	5.03E-04	8.49E-01				9.89E-01	9.42E-01	9.98E-01	9.88E-01	7.78E-01	7.77E-01		9.66E-01	
2.00E+09	8.96E-01		1.89E-02		5.86E-01				8.40E-01	6.32E-01	9.69E-01	8.41E-01	4.05E-01	4.05E-01		7.70E-01	
3.00E+09	7.23E-01		1.93E-03		3.92E-01				5.77E-01	4.04E-01	8.24E-01	6.34E-01	2.09E-01	2.09E-01		5.59E-01	
5.00E+09	4.16E-01				1.89E-01				3.10E-01	1.98E-01	4.92E-01	3.16E-01	7.52E-02	7.24E-02		2.74E-01	
7.00E+09	2.46E-01				1.04E-01				1.68E-01	9.64E-02	3.10E-01	1.70E-01	2.59E-02	2.42E-02		1.34E-01	
1.00E+10	1.11E-01				3.54E-02				5.10E-02	2.35E-02	1.52E-01	6.95E-02	2.43E-04	2.62E-04		5.78E-02	
2.00E+10	2.14E-05										4.06E-06						
3.00E+10																	
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2.00E+11																	
3.00E+11																	
5.00E+11																	
7.00E+11																	
1.00E+12																	
Mean	5.30E+09	7.73E+07	3.97E+08	9.65E+07	3.26E+09	9.27E+06	7.66E+06	3.76E+07	4.37E+09	3.34E+09	6.01E+09	4.56E+09	2.18E+09	2.18E+09	3.09E+07	4.08E+09	8.45E+07

TABLE 7 (continued)

Economic Cost ($)	Probability of Exceedence, Farm-Dependent Decontamination Cost (2016 Dollars, Assuming 3% Inflation Rate)																
	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+06	1.00E+00	3.26E-01	9.15E-01	5.04E-01	1.00E+00			8.66E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.73E-02	1.00E+00	4.81E-01
2.00E+06	1.00E+00	1.09E-01	8.04E-01	1.57E-01	1.00E+00			5.47E-04	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00		1.00E+00	1.20E-01
3.00E+06	1.00E+00	6.38E-02	7.27E-01	1.10E-01	1.00E+00			1.50E-05	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00		1.00E+00	6.48E-02
5.00E+06	1.00E+00	8.73E-04	3.90E-01	4.54E-03	1.00E+00				1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00		1.00E+00	
7.00E+06	1.00E+00	1.63E-04	3.00E-01	1.18E-03	9.99E-01				1.00E+00	9.99E-01	1.00E+00	1.00E+00	9.94E-01	9.94E-01		1.00E+00	
1.00E+07	1.00E+00		1.50E-01		9.92E-01				1.00E+00	9.92E-01	1.00E+00	1.00E+00	9.63E-01	9.63E-01		1.00E+00	
2.00E+07	1.00E+00		3.50E-03		9.24E-01				9.98E-01	9.76E-01	1.00E+00	9.98E-01	8.06E-01	8.07E-01		9.91E-01	
3.00E+07	9.94E-01				8.23E-01				9.94E-01	8.86E-01	9.99E-01	9.86E-01	4.78E-01	4.75E-01		9.42E-01	
5.00E+07	9.00E-01				4.96E-01				7.87E-01	4.97E-01	9.68E-01	8.31E-01	5.78E-02	5.63E-02		6.63E-01	
7.00E+07	6.38E-01				1.78E-01				3.58E-01	1.28E-01	7.60E-01	4.41E-01	3.06E-03	3.04E-03		3.42E-01	
1.00E+08	2.05E-01				2.67E-02				2.90E-02	7.95E-04	2.74E-01	9.08E-02				5.27E-02	
2.00E+08																	
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5.00E+11																	
7.00E+11																	
1.00E+12																	
Mean	8.06E+07	1.02E+06	5.36E+06	1.30E+06	5.10E+07	1.85E+05	1.37E+05	5.59E+05	6.46E+07	5.04E+07	8.68E+07	6.91E+07	2.99E+07	2.98E+07	4.42E+05	6.13E+07	1.17E+06

TABLE 7 (continued)

Economic Cost ($)	Probability of Exceedence, Farm-Dependent Decontamination Cost (2016 Dollars, Assuming 7% Inflation Rate)																
	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+06	1.00E+00	7.14E-01	9.72E-01	8.18E-01	1.00E+00	1.63E-04	2.11E-02	4.55E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	3.45E-01	1.00E+00	8.37E-01
2.00E+06	1.00E+00	2.94E-01	9.02E-01	4.35E-01	1.00E+00			4.61E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.38E-03	1.00E+00	3.92E-01
3.00E+06	1.00E+00	1.23E-01	8.52E-01	2.19E-01	1.00E+00			1.29E-03	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00		1.00E+00	1.69E-01
5.00E+06	1.00E+00	8.55E-02	7.49E-01	1.30E-01	1.00E+00			2.92E-04	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00		1.00E+00	8.59E-02
7.00E+06	1.00E+00	1.91E-03	5.13E-01	1.54E-02	1.00E+00				1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00		1.00E+00	4.43E-03
1.00E+07	1.00E+00	8.73E-04	3.76E-01	4.36E-03	1.00E+00				1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00		1.00E+00	
2.00E+07	1.00E+00		9.92E-02		9.90E-01				1.00E+00	9.91E-01	1.00E+00	1.00E+00	9.54E-01	9.54E-01		1.00E+00	
3.00E+07	1.00E+00		1.55E-02		9.52E-01				9.99E-01	9.80E-01	1.00E+00	1.00E+00	8.66E-01	8.66E-01		9.97E-01	
5.00E+07	9.99E-01				8.59E-01				9.96E-01	9.20E-01	9.99E-01	9.92E-01	5.84E-01	5.85E-01		9.60E-01	
7.00E+07	9.75E-01				7.02E-01				9.42E-01	7.48E-01	9.97E-01	9.56E-01	2.25E-01	2.19E-01		8.66E-01	
1.00E+08	8.57E-01				4.09E-01				7.15E-01	3.89E-01	9.40E-01	7.53E-01	2.83E-02	2.81E-02		5.81E-01	
2.00E+08	1.39E-01				1.88E-02				9.54E-03	5.28E-04	1.69E-01	4.76E-02				2.63E-02	
3.00E+08	3.24E-03										1.28E-03	5.55E-04					
5.00E+08																	
7.00E+08																	
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2.00E+11																	
3.00E+11																	
5.00E+11																	
7.00E+11																	
1.00E+12																	
Mean	1.48E+08	1.88E+06	9.86E+06	2.40E+06	9.39E+07	3.41E+05	2.52E+05	1.03E+06	1.19E+08	9.27E+07	1.60E+08	1.27E+08	5.49E+07	5.48E+07	8.13E+05	1.13E+08	2.15E+06

TABLE 7 (continued)

Economic Cost ($)	Probability of Exceedence, Population-Dependent Interdiction Cost (2016 Dollars, Assuming 3% Inflation Rate)																
	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+06	1.00E+00	9.85E-01	1.00E+00	9.92E-01	1.00E+00	9.06E-01	7.64E-01	9.82E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.39E-01	1.00E+00	9.94E-01
2.00E+06	1.00E+00	9.77E-01	1.00E+00	9.87E-01	1.00E+00	8.15E-01	6.24E-01	9.62E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	8.82E-01	1.00E+00	9.90E-01
3.00E+06	1.00E+00	9.63E-01	9.99E-01	9.83E-01	1.00E+00	7.66E-01	5.90E-01	9.53E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	8.52E-01	1.00E+00	9.84E-01
5.00E+06	1.00E+00	9.50E-01	9.99E-01	9.74E-01	1.00E+00	6.43E-01	4.72E-01	9.16E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	8.10E-01	1.00E+00	9.74E-01
7.00E+06	1.00E+00	9.26E-01	9.97E-01	9.56E-01	1.00E+00	5.34E-01	4.04E-01	8.78E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	7.36E-01	1.00E+00	9.66E-01
1.00E+07	1.00E+00	8.84E-01	9.91E-01	9.28E-01	1.00E+00	4.02E-01	2.57E-01	7.93E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	6.12E-01	1.00E+00	9.35E-01
2.00E+07	1.00E+00	7.59E-01	9.79E-01	8.54E-01	1.00E+00	1.58E-01	1.15E-01	6.24E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	4.49E-01	1.00E+00	8.53E-01
3.00E+07	1.00E+00	6.61E-01	9.61E-01	7.68E-01	1.00E+00	2.16E-02	1.99E-02	4.61E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	3.45E-01	1.00E+00	7.74E-01
5.00E+07	1.00E+00	5.23E-01	9.21E-01	5.99E-01	1.00E+00		1.57E-02	2.97E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	2.64E-01	1.00E+00	6.08E-01
7.00E+07	1.00E+00	4.32E-01	8.85E-01	5.25E-01	1.00E+00		5.67E-03	2.22E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.81E-01	1.00E+00	5.33E-01
1.00E+08	1.00E+00	2.38E-01	8.16E-01	3.33E-01	1.00E+00		2.06E-03	7.99E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.32E-02	1.00E+00	3.16E-01
2.00E+08	1.00E+00	1.03E-01	6.37E-01	1.38E-01	9.96E-01		1.18E-03	3.32E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	2.75E-02	1.00E+00	1.22E-01
3.00E+08	1.00E+00	2.87E-02	4.38E-01	4.47E-02	9.92E-01			1.93E-03	1.00E+00	9.99E-01	1.00E+00	1.00E+00	9.95E-01	9.95E-01		1.00E+00	3.18E-02
5.00E+08	1.00E+00	1.71E-02	2.27E-01	2.63E-02	9.70E-01			6.27E-05	9.99E-01	9.95E-01	1.00E+00	9.99E-01	9.74E-01	9.74E-01		9.97E-01	1.49E-02
7.00E+08	1.00E+00	7.92E-03	1.58E-01	1.38E-02	9.50E-01			4.04E-05	9.97E-01	9.87E-01	1.00E+00	9.97E-01	9.43E-01	9.44E-01		9.91E-01	6.90E-03
1.00E+09	9.87E-01	1.59E-04	9.10E-02	7.06E-04	8.88E-01				9.92E-01	9.54E-01	1.00E+00	9.89E-01	8.31E-01	8.33E-01		9.76E-01	2.87E-05
2.00E+09	9.33E-01	4.97E-05	3.54E-02	1.60E-04	6.51E-01				8.79E-01	6.90E-01	9.82E-01	9.07E-01	4.34E-01	4.36E-01		8.33E-01	
3.00E+09	7.70E-01		6.59E-03		4.49E-01				6.06E-01	4.38E-01	8.85E-01	7.23E-01	2.39E-01	2.39E-01		6.26E-01	
5.00E+09	4.76E-01				2.54E-01				3.46E-01	2.20E-01	5.42E-01	4.14E-01	7.55E-02	7.44E-02		3.40E-01	
7.00E+09	3.09E-01				1.48E-01				1.69E-01	9.22E-02	3.71E-01	2.35E-01	2.03E-02	2.03E-02		1.94E-01	
1.00E+10	1.36E-01				6.72E-02				3.99E-02	2.08E-02	1.63E-01	1.00E-01	1.92E-05	1.92E-05		8.90E-02	
2.00E+10	1.42E-02				6.37E-03					1.82E-04	2.71E-03	1.42E-02				6.56E-03	
3.00E+10	9.93E-04				7.56E-04							8.13E-04				7.73E-04	
5.00E+10																	
7.00E+10																	
1.00E+11																	
2.00E+11																	
3.00E+11																	
5.00E+11																	
7.00E+11																	
1.00E+12																	
Mean	5.97E+09	8.41E+07	4.36E+08	1.05E+08	3.95E+09	1.01E+07	8.39E+06	4.49E+07	4.44E+09	3.51E+09	6.39E+09	5.48E+09	2.27E+09	2.27E+09	3.75E+07	4.81E+09	9.75E+07

TABLE 7 (continued)

Economic Cost ($)	Probability of Exceedence, Population-Dependent Interdiction Cost (2016 Dollars, Assuming 7% Inflation Rate)																
	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+06	1.00E+00	9.88E-01	1.00E+00	9.95E-01	1.00E+00	9.33E-01	7.94E-01	9.84E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.63E-01	1.00E+00	9.95E-01
2.00E+06	1.00E+00	9.84E-01	1.00E+00	9.92E-01	1.00E+00	9.01E-01	7.54E-01	9.82E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.31E-01	1.00E+00	9.94E-01
3.00E+06	1.00E+00	9.79E-01	1.00E+00	9.92E-01	1.00E+00	8.48E-01	6.80E-01	9.77E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	8.95E-01	1.00E+00	9.93E-01
5.00E+06	1.00E+00	9.65E-01	9.99E-01	9.83E-01	1.00E+00	7.79E-01	6.00E-01	9.55E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	8.55E-01	1.00E+00	9.85E-01
7.00E+06	1.00E+00	9.60E-01	9.99E-01	9.79E-01	1.00E+00	7.32E-01	5.51E-01	9.43E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	8.38E-01	1.00E+00	9.81E-01
1.00E+07	1.00E+00	9.47E-01	9.98E-01	9.70E-01	1.00E+00	6.05E-01	4.31E-01	9.10E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	7.95E-01	1.00E+00	9.72E-01
2.00E+07	1.00E+00	8.75E-01	9.90E-01	9.25E-01	1.00E+00	3.73E-01	2.41E-01	7.73E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	5.87E-01	1.00E+00	9.27E-01
3.00E+07	1.00E+00	8.08E-01	9.84E-01	8.85E-01	1.00E+00	2.51E-01	1.86E-01	6.74E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	4.93E-01	1.00E+00	8.85E-01
5.00E+07	1.00E+00	7.02E-01	9.70E-01	7.92E-01	1.00E+00	4.13E-02	2.52E-02	5.08E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	3.76E-01	1.00E+00	8.02E-01
7.00E+07	1.00E+00	5.73E-01	9.44E-01	6.87E-01	1.00E+00	3.54E-03	1.74E-02	3.53E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	2.83E-01	1.00E+00	6.94E-01
1.00E+08	1.00E+00	5.14E-01	9.15E-01	5.85E-01	1.00E+00		1.57E-02	2.89E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	2.55E-01	1.00E+00	5.95E-01
2.00E+08	1.00E+00	2.27E-01	8.06E-01	3.00E-01	1.00E+00		2.06E-03	7.70E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	8.88E-02	1.00E+00	2.89E-01
3.00E+08	1.00E+00	1.21E-01	6.98E-01	1.63E-01	9.99E-01		1.18E-03	3.56E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	2.78E-02	1.00E+00	1.51E-01
5.00E+08	1.00E+00	3.75E-02	4.95E-01	6.05E-02	9.94E-01			5.10E-03	1.00E+00	9.99E-01	1.00E+00	1.00E+00	9.97E-01	9.97E-01		1.00E+00	4.53E-02
7.00E+08	1.00E+00	1.83E-02	3.30E-01	2.79E-02	9.86E-01			7.46E-05	9.99E-01	9.97E-01	1.00E+00	1.00E+00	9.87E-01	9.87E-01		9.98E-01	1.68E-02
1.00E+09	1.00E+00	1.58E-02	2.05E-01	2.28E-02	9.65E-01			6.27E-05	9.98E-01	9.94E-01	1.00E+00	9.99E-01	9.70E-01	9.70E-01		9.95E-01	1.38E-02
2.00E+09	9.94E-01	1.45E-04	8.41E-02	5.83E-04	8.77E-01				9.90E-01	9.43E-01	9.99E-01	9.88E-01	7.88E-01	7.87E-01		9.69E-01	
3.00E+09	9.70E-01	7.20E-05	5.10E-02	3.21E-04	7.51E-01				9.39E-01	8.13E-01	9.95E-01	9.53E-01	5.38E-01	5.38E-01		9.02E-01	
5.00E+09	8.31E-01		8.90E-03		4.98E-01				6.65E-01	4.83E-01	9.13E-01	7.70E-01	2.85E-01	2.86E-01		6.80E-01	
7.00E+09	6.24E-01		6.34E-03		3.53E-01				4.71E-01	3.33E-01	7.04E-01	5.69E-01	1.48E-01	1.49E-01		4.88E-01	
1.00E+10	4.36E-01				2.19E-01				3.12E-01	1.92E-01	4.88E-01	3.64E-01	5.36E-02	5.38E-02		3.07E-01	
2.00E+10	1.06E-01				4.68E-02				2.38E-02	1.33E-02	1.21E-01	8.59E-02				6.73E-02	
3.00E+10	2.64E-02				1.66E-02				5.79E-04	3.44E-04	1.61E-02	3.16E-02				1.70E-02	
5.00E+10	2.64E-03				1.82E-03					8.65E-06	2.52E-05	1.88E-03				1.13E-03	
7.00E+10																	
1.00E+11																	
2.00E+11																	
3.00E+11																	
5.00E+11																	
7.00E+11																	
1.00E+12																	
Mean	1.10E+10	1.55E+08	8.02E+08	1.92E+08	7.26E+09	1.87E+07	1.54E+07	8.26E+07	8.17E+09	6.45E+09	1.18E+10	1.01E+10	4.17E+09	4.17E+09	6.90E+07	8.84E+09	1.79E+08

TABLE 7 (continued)

Economic Cost ($)	Probability of Exceedence, Farm-Dependent Interdiction Cost (2016 Dollars, Assuming 3% Inflation Rate)																
	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+06	1.00E+00	4.52E-01	7.61E-01	5.24E-01	1.00E+00	1.70E-01	3.64E-02	4.34E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	3.41E-01	1.00E+00	5.21E-01
2.00E+06	1.00E+00	4.01E-01	6.39E-01	4.60E-01	1.00E+00	7.72E-03	6.80E-03	2.75E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.59E-01	1.00E+00	4.58E-01
3.00E+06	1.00E+00	3.13E-01	5.29E-01	3.72E-01	9.99E-01	1.40E-03	1.03E-03	8.35E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.94E-01	9.94E-01	7.25E-02	1.00E+00	3.50E-01
5.00E+06	1.00E+00	1.69E-01	4.75E-01	2.38E-01	9.87E-01			7.58E-03	1.00E+00	9.95E-01	1.00E+00	1.00E+00	9.46E-01	9.47E-01	7.32E-03	1.00E+00	2.11E-01
7.00E+06	1.00E+00	9.53E-02	4.03E-01	1.39E-01	9.76E-01			1.76E-04	1.00E+00	9.67E-01	1.00E+00	1.00E+00	8.73E-01	8.75E-01	2.41E-03	1.00E+00	1.17E-01
1.00E+07	1.00E+00	4.86E-02	3.12E-01	6.81E-02	9.47E-01				9.94E-01	9.34E-01	1.00E+00	9.81E-01	7.13E-01	7.15E-01		9.93E-01	4.20E-02
2.00E+07	9.45E-01	1.94E-04	1.22E-01	1.64E-03	7.35E-01				8.22E-01	6.92E-01	9.32E-01	8.87E-01	5.28E-01	5.28E-01		8.22E-01	
3.00E+07	7.76E-01		1.18E-02		5.06E-01				5.92E-01	5.39E-01	7.44E-01	6.57E-01	4.75E-01	4.76E-01		6.27E-01	
5.00E+07	5.29E-01				2.36E-01				4.42E-01	3.22E-01	5.20E-01	5.20E-01	1.79E-01	1.74E-01		4.70E-01	
7.00E+07	3.66E-01				8.95E-02				2.72E-01	1.14E-01	3.68E-01	2.84E-01	5.85E-02	5.84E-02		2.73E-01	
1.00E+08	1.49E-01				1.09E-02				6.94E-02	1.19E-02	1.19E-01	6.18E-02	2.65E-04	3.92E-04		7.19E-02	
2.00E+08																	
3.00E+08																	
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2.00E+11																	
3.00E+11																	
5.00E+11																	
7.00E+11																	
1.00E+12																	
Mean	6.06E+07	2.42E+06	7.98E+06	3.05E+06	3.63E+07	4.85E+05	3.14E+05	1.18E+06	4.94E+07	3.87E+07	5.81E+07	5.19E+07	2.91E+07	2.91E+07	8.93E+05	5.06E+07	2.73E+06

TABLE 7 (continued)

Economic Cost ($)	Probability of Exceedence, Farm-Dependent Interdiction Cost (2016 Dollars, Assuming 7% Inflation Rate)																
	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+06	1.00E+00	5.35E-01	9.22E-01	6.26E-01	1.00E+00	4.32E-01	2.49E-01	5.27E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	4.46E-01	1.00E+00	5.83E-01
2.00E+06	1.00E+00	4.39E-01	7.50E-01	5.17E-01	1.00E+00	1.20E-01	3.45E-02	4.14E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	3.18E-01	1.00E+00	5.18E-01
3.00E+06	1.00E+00	4.15E-01	6.94E-01	4.78E-01	1.00E+00	1.81E-02	2.27E-02	3.50E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	2.00E-01	1.00E+00	4.84E-01
5.00E+06	1.00E+00	3.49E-01	5.34E-01	3.87E-01	9.99E-01	2.76E-03	3.27E-03	1.10E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.96E-01	9.96E-01	9.27E-02	1.00E+00	3.76E-01
7.00E+06	1.00E+00	1.95E-01	5.11E-01	3.00E-01	9.89E-01			5.55E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.81E-01	9.81E-01	1.55E-02	1.00E+00	2.90E-01
1.00E+07	1.00E+00	1.54E-01	4.56E-01	2.20E-01	9.86E-01			4.22E-03	1.00E+00	9.91E-01	1.00E+00	1.00E+00	9.28E-01	9.28E-01	6.49E-03	1.00E+00	1.94E-01
2.00E+07	1.00E+00	4.33E-02	2.93E-01	5.53E-02	9.39E-01				9.91E-01	9.27E-01	9.98E-01	9.74E-01	6.71E-01	6.71E-01		9.89E-01	3.14E-02
3.00E+07	9.80E-01	1.16E-03	2.19E-01	8.18E-03	8.60E-01				9.27E-01	8.14E-01	9.73E-01	9.31E-01	5.43E-01	5.43E-01		9.02E-01	
5.00E+07	8.45E-01		2.86E-02		5.67E-01				6.42E-01	5.53E-01	8.01E-01	7.17E-01	5.01E-01	5.01E-01		6.62E-01	
7.00E+07	6.23E-01		6.02E-05		3.94E-01				5.34E-01	4.65E-01	6.25E-01	5.74E-01	3.63E-01	3.65E-01		5.48E-01	
1.00E+08	4.90E-01				1.87E-01				4.12E-01	2.62E-01	4.89E-01	4.62E-01	1.32E-01	1.33E-01		4.20E-01	
2.00E+08	1.11E-01				2.61E-03				2.92E-02	4.53E-03	6.36E-02	3.22E-02	1.05E-04	1.22E-04		4.64E-02	
3.00E+08																	
5.00E+08																	
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2.00E+11																	
3.00E+11																	
5.00E+11																	
7.00E+11																	
1.00E+12																	
Mean	1.11E+06	4.45E+06	1.47E+07	5.61E+06	6.67E+07	8.92E+05	5.77E+05	2.18E+06	9.08E+07	7.12E+07	1.07E+08	9.55E+07	5.35E+07	5.36E+07	1.64E+06	9.30E+07	5.02E+06

TABLE 7 (continued)

Economic Cost ($)	Probability of Exceedence, Population-Dependent Condemnation Cost (2016 Dollars, Assuming 3% Inflation Rate)																
	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+06	1.00E+00	2.39E-01	6.94E-01	3.01E-01	9.98E-01	8.70E-03	2.49E-02	2.24E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.91E-01	9.92E-01	8.83E-02	1.00E+00	2.27E-01
2.00E+06	1.00E+00	1.84E-01	6.44E-01	2.35E-01	9.96E-01	3.90E-03	1.80E-02	1.45E-02	9.98E-01	9.98E-01	1.00E+00	9.99E-01	9.76E-01	9.76E-01	4.70E-02	9.99E-01	1.57E-01
3.00E+06	1.00E+00	1.48E-01	5.81E-01	1.89E-01	9.95E-01	3.90E-03	1.80E-02	1.45E-02	9.96E-01	9.98E-01	1.00E+00	9.99E-01	9.69E-01	9.68E-01	4.68E-02	9.99E-01	1.26E-01
5.00E+06	9.99E-01	1.46E-01	5.35E-01	1.82E-01	9.95E-01	3.90E-03	1.80E-02	1.45E-02	9.95E-01	9.98E-01	1.00E+00	9.98E-01	9.59E-01	9.57E-01	4.68E-02	9.96E-01	1.25E-01
7.00E+06	9.99E-01	1.46E-01	5.19E-01	1.81E-01	9.94E-01	3.90E-03	1.80E-02	1.45E-02	9.95E-01	9.98E-01	1.00E+00	9.98E-01	9.55E-01	9.52E-01	4.68E-02	9.96E-01	1.25E-01
1.00E+07	9.99E-01	4.82E-02	4.05E-01	7.51E-02	9.94E-01				9.95E-01	9.98E-01	1.00E+00	9.98E-01	9.48E-01	9.46E-01		9.96E-01	9.88E-03
2.00E+07	9.98E-01	3.20E-02	2.71E-01	4.49E-02	9.89E-01				9.89E-01	9.93E-01	9.99E-01	9.96E-01	8.76E-01	8.73E-01		9.93E-01	7.22E-03
3.00E+07	9.98E-01	3.17E-02	2.54E-01	4.45E-02	9.88E-01				9.88E-01	9.90E-01	9.99E-01	9.93E-01	8.49E-01	8.48E-01		9.92E-01	7.11E-03
5.00E+07	9.97E-01	2.89E-02	1.30E-01	3.90E-02	9.78E-01				9.80E-01	9.78E-01	9.98E-01	9.87E-01	7.32E-01	7.31E-01		9.83E-01	7.11E-03
7.00E+07	9.92E-01	2.86E-02	1.02E-01	3.84E-02	9.45E-01				9.53E-01	9.37E-01	9.90E-01	9.67E-01	6.53E-01	6.53E-01		9.57E-01	7.11E-03
1.00E+08	9.85E-01	8.70E-04	7.42E-02	1.74E-03	9.30E-01				9.28E-01	9.10E-01	9.82E-01	9.53E-01	5.05E-01	5.04E-01		9.33E-01	
2.00E+08	9.61E-01				8.91E-01				8.38E-01	8.19E-01	9.45E-01	9.07E-01	2.12E-01	2.10E-01		8.78E-01	
3.00E+08	9.25E-01				8.18E-01				7.44E-01	7.21E-01	8.92E-01	8.53E-01	9.47E-02	9.49E-02		8.00E-01	
5.00E+08	8.74E-01				7.63E-01				6.30E-01	6.03E-01	8.16E-01	7.76E-01	5.78E-02	5.81E-02		7.06E-01	
7.00E+08	8.01E-01				6.10E-01				4.37E-01	3.57E-01	7.08E-01	6.75E-01	1.89E-02	1.90E-02		5.75E-01	
1.00E+09	6.65E-01				5.24E-01				2.87E-01	2.33E-01	5.24E-01	5.82E-01	1.32E-02	1.32E-02		4.62E-01	
2.00E+09	3.48E-01				2.55E-01				1.05E-01	9.74E-02	2.07E-01	3.00E-01	7.49E-03	7.51E-03		2.22E-01	
3.00E+09	1.71E-01				1.25E-01				2.31E-02	2.22E-02	7.15E-02	1.44E-01				9.78E-02	
5.00E+09	9.26E-02				8.49E-02				6.88E-03	1.57E-02	1.53E-02	1.11E-01				7.70E-02	
7.00E+09	4.07E-02				2.73E-02				2.77E-03	2.61E-03	5.90E-03	4.20E-02				2.45E-02	
1.00E+10	8.09E-03				8.47E-03					1.70E-04		1.65E-02				6.54E-03	
2.00E+10	1.69E-03				1.73E-03					6.09E-05		3.93E-03				1.66E-03	
3.00E+10	2.82E-05				3.01E-06							3.18E-04				2.08E-04	
5.00E+10																	
7.00E+10																	
1.00E+11																	
2.00E+11																	
3.00E+11																	
5.00E+11																	
7.00E+11																	
1.00E+12																	
Mean	2.09E+09	3.80E+06	2.14E+07	4.80E+06	1.70E+09	5.10E+04	1.61E+05	1.36E+05	8.80E+08	8.38E+08	1.36E+09	1.97E+09	1.61E+08	1.61E+08	5.18E+05	1.53E+09	1.76E+06

TABLE 7 (continued)

Economic Cost ($)	Probability of Exceedence, Population-Dependent Condemnation Cost (2016 Dollars, Assuming 7% Inflation Rate)																
	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+06	1.00E+00	3.24E-01	7.23E-01	3.82E-01	9.98E-01	2.07E-02	3.51E-02	3.29E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.98E-01	9.98E-01	1.66E-01	1.00E+00	3.11E-01
2.00E+06	1.00E+00	2.34E-01	6.64E-01	2.91E-01	9.97E-01	8.70E-03	2.49E-02	2.23E-02	9.99E-01	1.00E+00	1.00E+00	1.00E+00	9.88E-01	9.88E-01	8.82E-02	1.00E+00	2.19E-01
3.00E+06	1.00E+00	1.92E-01	6.47E-01	2.44E-01	9.96E-01	3.90E-03	1.80E-02	1.45E-02	9.98E-01	9.98E-01	1.00E+00	9.99E-01	9.77E-01	9.77E-01	4.70E-02	1.00E+00	1.68E-01
5.00E+06	1.00E+00	1.71E-01	5.92E-01	2.14E-01	9.95E-01	3.90E-03	1.80E-02	1.45E-02	9.96E-01	9.98E-01	1.00E+00	9.99E-01	9.71E-01	9.70E-01	4.68E-02	9.99E-01	1.30E-01
7.00E+06	9.99E-01	1.47E-01	5.75E-01	1.85E-01	9.95E-01	3.90E-03	1.80E-02	1.45E-02	9.95E-01	9.98E-01	1.00E+00	9.99E-01	9.64E-01	9.64E-01	4.68E-02	9.98E-01	1.25E-01
1.00E+07	9.99E-01	1.46E-01	5.34E-01	1.81E-01	9.94E-01	3.90E-03	1.80E-02	1.45E-02	9.95E-01	9.98E-01	1.00E+00	9.98E-01	9.57E-01	9.55E-01	4.68E-02	9.96E-01	1.25E-01
2.00E+07	9.99E-01	4.57E-02	3.77E-01	6.56E-02	9.94E-01				9.95E-01	9.98E-01	1.00E+00	9.98E-01	9.46E-01	9.43E-01		9.96E-01	9.36E-03
3.00E+07	9.99E-01	3.23E-02	2.76E-01	4.62E-02	9.91E-01				9.95E-01	9.96E-01	9.99E-01	9.98E-01	9.13E-01	9.11E-01		9.95E-01	7.22E-03
5.00E+07	9.98E-01	3.17E-02	2.69E-01	4.45E-02	9.89E-01				9.88E-01	9.90E-01	9.99E-01	9.93E-01	8.60E-01	8.58E-01		9.93E-01	7.11E-03
7.00E+07	9.98E-01	2.89E-02	1.96E-01	3.90E-02	9.84E-01				9.85E-01	9.84E-01	9.99E-01	9.90E-01	7.96E-01	7.96E-01		9.87E-01	7.11E-03
1.00E+08	9.97E-01	2.89E-02	1.30E-01	3.90E-02	9.73E-01				9.76E-01	9.73E-01	9.97E-01	9.85E-01	7.04E-01	7.04E-01		9.79E-01	7.11E-03
2.00E+08	9.84E-01	8.70E-04	7.28E-02	1.74E-03	9.22E-01				9.18E-01	8.99E-01	9.80E-01	9.51E-01	4.75E-01	4.74E-01		9.29E-01	
3.00E+08	9.71E-01		1.92E-05		9.00E-01				8.69E-01	8.52E-01	9.57E-01	9.22E-01	3.17E-01	3.14E-01		8.94E-01	
5.00E+08	9.39E-01				8.46E-01				7.79E-01	7.63E-01	9.11E-01	8.65E-01	1.29E-01	1.29E-01		8.14E-01	
7.00E+08	9.01E-01				7.84E-01				6.68E-01	6.45E-01	8.58E-01	8.02E-01	6.65E-02	6.56E-02		7.49E-01	
1.00E+09	8.63E-01				7.39E-01				6.03E-01	5.69E-01	8.04E-01	7.59E-01	5.25E-02	5.27E-02		6.90E-01	
2.00E+09	6.43E-01				5.01E-01				2.71E-01	2.24E-01	4.85E-01	5.70E-01	1.32E-02	1.32E-02		4.52E-01	
3.00E+09	4.34E-01				3.33E-01				1.40E-01	1.23E-01	2.82E-01	3.80E-01	7.49E-03	7.51E-03		2.88E-01	
5.00E+09	2.09E-01				1.39E-01				3.55E-02	2.65E-02	1.00E-01	1.59E-01				1.06E-01	
7.00E+09	1.17E-01				9.96E-02				8.92E-03	1.83E-02	2.60E-02	1.29E-01				8.70E-02	
1.00E+10	8.68E-02				8.24E-02				6.88E-03	1.56E-02	1.49E-02	1.10E-01				7.68E-02	
2.00E+10	7.23E-03				6.99E-03					1.02E-04		1.07E-02				4.42E-03	
3.00E+10	4.58E-03				4.36E-03					6.40E-05		4.41E-03				1.76E-03	
5.00E+10	2.82E-05				6.02E-06							3.18E-04				2.08E-04	
7.00E+10																	
1.00E+11																	
2.00E+11																	
3.00E+11																	
5.00E+11																	
7.00E+11																	
1.00E+12																	
Mean	3.85E+09	6.63E+06	3.93E+07	8.83E+06	3.13E+09	9.38E+04	2.97E+05	2.50E+05	1.62E+09	1.54E+09	2.50E+09	3.63E+09	2.97E+08	2.96E+08	9.53E+05	2.81E+09	3.24E+06

TABLE 7 (continued)

Economic Cost ($)	Probability of Exceedence, Farm-Dependent Condemnation Cost (2016 Dollars, Assuming 3% Inflation Rate)																
	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+06	9.97E-01		7.88E-05		9.82E-01				9.78E-01	9.83E-01	1.00E+00	9.85E-01	6.30E-01	6.32E-01		9.78E-01	
2.00E+06	9.82E-01				9.27E-01				9.22E-01	9.08E-01	9.94E-01	9.49E-01	1.62E-01	1.63E-01		9.17E-01	
3.00E+06	9.62E-01				8.73E-01				8.27E-01	8.11E-01	9.87E-01	8.89E-01	8.94E-02	9.04E-02		8.51E-01	
5.00E+06	8.61E-01				6.41E-01				4.91E-01	3.20E-01	9.37E-01	7.34E-01	1.08E-03	7.62E-04		6.23E-01	
7.00E+06	7.28E-01				5.67E-01				2.59E-01	1.73E-01	8.62E-01	6.55E-01				4.84E-01	
1.00E+07	5.27E-01				4.83E-01				6.55E-02	1.13E-01	7.52E-01	6.13E-01				4.47E-01	
2.00E+07	1.64E-01				6.37E-02				1.70E-03	2.97E-03	3.86E-01	1.05E-01				4.41E-02	
3.00E+07	4.00E-02				4.19E-02					8.91E-04	1.65E-01	8.31E-02				2.86E-02	
5.00E+07	1.22E-02				1.07E-02						5.64E-02	1.92E-02				5.74E-03	
7.00E+07	2.28E-03				7.66E-04						1.16E-02	3.17E-03				2.71E-04	
1.00E+08	2.48E-04				2.30E-04						3.24E-04						
2.00E+08																	
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7.00E+11																	
1.00E+12																	
Mean	1.35E+07	3.21E+04	1.97E+05	4.17E+04	1.14E+07	1.28E+03	2.02E+03	4.19E+04	5.56E+06	5.52E+06	2.04E+07	1.41E+07	1.41E+06	1.41E+06	1.02E+04	1.04E+07	3.60E+04

TABLE 7 (continued)

Economic Cost ($)	Probability of Exceedence, Farm-Dependent Condemnation Cost (2016 Dollars, Assuming 7% Inflation Rate)																
	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+06	9.99E-01		6.32E-02		9.90E-01				9.92E-01	9.95E-01	1.00E+00	9.95E-01	8.51E-01	8.52E-01		9.91E-01	
2.00E+06	9.97E-01				9.80E-01				9.78E-01	9.80E-01	1.00E+00	9.83E-01	5.87E-01	5.89E-01		9.76E-01	
3.00E+06	9.91E-01				9.57E-01				9.53E-01	9.52E-01	9.97E-01	9.66E-01	2.79E-01	2.84E-01		9.52E-01	
5.00E+06	9.71E-01				8.86E-01				8.57E-01	8.32E-01	9.89E-01	9.08E-01	9.18E-02	9.14E-02		8.70E-01	
7.00E+06	9.29E-01				7.85E-01				7.41E-01	6.67E-01	9.78E-01	8.45E-01	5.71E-02	5.85E-02		7.87E-01	
1.00E+07	8.30E-01				6.09E-01				4.03E-01	2.30E-01	9.19E-01	6.95E-01	1.35E-04	1.49E-04		5.61E-01	
2.00E+07	5.04E-01				4.80E-01				5.59E-02	1.10E-01	7.38E-01	5.94E-01				4.36E-01	
3.00E+07	3.88E-01				2.47E-01				1.40E-02	4.63E-02	6.29E-01	3.87E-01				2.37E-01	
5.00E+07	4.13E-02				4.37E-02					9.27E-04	1.73E-01	8.72E-02				3.06E-02	
7.00E+07	3.04E-02				2.59E-02					1.88E-04	1.27E-01	3.52E-02				1.25E-02	
1.00E+08	6.82E-03				6.46E-03						3.66E-02	1.70E-02				4.64E-03	
2.00E+08					7.85E-06						2.08E-04						
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1.00E+12																	
Mean	2.48E+07	5.90E+04	3.63E+05	7.67E+04	2.10E+07	2.36E+03	3.72E+03	7.70E+04	1.02E+07	1.02E+07	3.76E+07	2.60E+07	2.59E+06	2.60E+06	1.88E+04	1.91E+07	6.62E+04

TABLE 7 (continued)

Economic Cost ($)	Probability of Exceedence, Emergency Phase Cost (2016 Dollars, Assuming 3% Inflation Rate)																
	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+06	1.00E+00	1.05E-01	1.23E-01	1.27E-02	9.15E-01	8.70E-04	1.41E-03	9.63E-02	9.86E-01	9.60E-01	1.00E+00	1.00E+00	9.14E-01	9.12E-01	1.47E-02	9.90E-01	1.23E-01
2.00E+06	9.98E-01	6.68E-03	9.21E-04		8.60E-01			1.68E-03	9.65E-01	9.03E-01	1.00E+00	9.99E-01	8.07E-01	8.02E-01		9.75E-01	7.11E-04
3.00E+06	9.96E-01	4.95E-03			8.00E-01				9.38E-01	8.47E-01	1.00E+00	9.98E-01	6.90E-01	6.80E-01		9.50E-01	
5.00E+06	9.86E-01	4.00E-03			7.18E-01				8.70E-01	7.71E-01	9.99E-01	9.97E-01	5.44E-01	5.31E-01		9.06E-01	
7.00E+06	9.62E-01	8.56E-04			5.74E-01				7.68E-01	6.03E-01	9.97E-01	9.87E-01	3.40E-01	3.23E-01		8.27E-01	
1.00E+07	9.21E-01	6.71E-04			4.84E-01				6.43E-01	4.82E-01	9.85E-01	9.67E-01	1.97E-01	1.85E-01		7.32E-01	
2.00E+07	6.52E-01				2.08E-01				3.26E-01	2.27E-01	9.18E-01	8.17E-01	6.60E-02	6.09E-02		4.05E-01	
3.00E+07	3.94E-01				1.05E-01				1.48E-01	1.01E-01	8.23E-01	6.11E-01	8.79E-03	5.80E-03		2.03E-01	
5.00E+07	2.18E-01				6.62E-02				8.47E-02	6.32E-02	6.35E-01	3.46E-01	5.36E-03	3.10E-03		1.09E-01	
7.00E+07	1.01E-01				1.28E-02				2.18E-02	1.05E-02	4.71E-01	2.21E-01				3.41E-02	
1.00E+08	4.01E-02				4.37E-03				5.13E-03	3.21E-03	3.04E-01	1.27E-01				9.21E-03	
2.00E+08	3.43E-03								4.28E-04		1.21E-01	2.89E-02				5.71E-04	
3.00E+08	1.20E-03								2.00E-04		4.35E-02	9.21E-03				2.00E-04	
5.00E+08											7.07E-06						
7.00E+08																	
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1.00E+12																	
Mean	3.59E+07	3.00E+05	3.43E+05	9.06E+04	1.45E+07	1.47E+04	3.12E+04	3.07E+05	1.91E+07	1.47E+07	9.59E+07	5.49E+07	7.00E+06	6.71E+06	9.04E+04	2.26E+07	3.46E+05

TABLE 7 (continued)

Economic Cost ($)	Probability of Exceedence, Emergency Phase Cost (2016 Dollars, Assuming 7% Inflation Rate)																
	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+06	1.00E+00	2.04E-01	2.73E-01	6.78E-02	9.59E-01	5.20E-03	2.14E-02	2.39E-01	9.98E-01	9.85E-01	1.00E+00	1.00E+00	9.72E-01	9.71E-01	6.52E-02	9.97E-01	2.80E-01
2.00E+06	9.99E-01	7.63E-02	9.44E-02	8.70E-04	9.09E-01			5.12E-02	9.83E-01	9.56E-01	1.00E+00	1.00E+00	8.98E-01	8.95E-01	5.06E-03	9.90E-01	9.23E-02
3.00E+06	9.99E-01	6.69E-03	4.40E-03		8.76E-01			6.71E-03	9.75E-01	9.24E-01	1.00E+00	9.99E-01	8.49E-01	8.45E-01		9.82E-01	5.29E-03
5.00E+06	9.96E-01	4.95E-03			8.10E-01				9.49E-01	8.62E-01	1.00E+00	9.98E-01	7.21E-01	7.14E-01		9.58E-01	
7.00E+06	9.91E-01	4.84E-03			7.51E-01				9.03E-01	8.10E-01	1.00E+00	9.97E-01	6.09E-01	5.98E-01		9.28E-01	
1.00E+07	9.82E-01	1.37E-03			6.80E-01				8.54E-01	7.39E-01	9.99E-01	9.95E-01	5.11E-01	5.00E-01		8.97E-01	
2.00E+07	9.03E-01	5.42E-04			4.33E-01				5.99E-01	4.45E-01	9.82E-01	9.54E-01	1.70E-01	1.60E-01		7.03E-01	
3.00E+07	7.56E-01	5.42E-04			2.93E-01				4.35E-01	2.93E-01	9.48E-01	8.88E-01	9.26E-02	8.40E-02		5.08E-01	
5.00E+07	4.60E-01				1.12E-01				1.69E-01	1.11E-01	8.47E-01	6.73E-01	1.44E-02	1.07E-02		2.36E-01	
7.00E+07	2.85E-01				9.20E-02				1.06E-01	8.47E-02	7.57E-01	4.85E-01	6.88E-03	4.25E-03		1.40E-01	
1.00E+08	1.97E-01				6.01E-02				7.77E-02	5.77E-02	6.02E-01	3.12E-01	4.22E-03	3.10E-03		1.01E-01	
2.00E+08	3.18E-02				4.14E-03				4.81E-03	3.02E-03	2.70E-01	1.05E-01				7.25E-03	
3.00E+08	1.42E-02				2.01E-03				1.75E-03	1.40E-03	1.57E-01	5.74E-02				3.07E-03	
5.00E+08	1.20E-03								2.00E-04		6.46E-02	9.46E-03				2.00E-04	
7.00E+08											2.16E-02	1.01E-03					
1.00E+09																	
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1.00E+12																	
Mean	6.60E+07	5.51E+05	6.30E+05	1.67E+05	2.67E+07	2.71E+04	5.74E+04	5.64E+05	3.51E+07	2.71E+07	1.76E+08	1.01E+08	1.29E+07	1.23E+07	1.66E+05	4.15E+07	6.36E+05

TABLE 7 (continued)

Economic Cost ($)	Probability of Exceedence, Milk Disposal Cost (2016 Dollars, Assuming 3% Inflation Rate)																
	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+06	3.16E-01		6.70E-04		1.23E-01				2.58E-01	1.56E-01	3.03E-01	2.23E-01	1.03E-01	1.04E-01		2.56E-01	
2.00E+06	5.28E-02				3.47E-03				2.27E-02	1.00E-02	4.52E-02	1.36E-02	1.22E-04	1.60E-04		2.30E-02	
3.00E+06																	
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Mean	8.18E+05	1.95E+04	1.24E+05	6.53E+04	4.87E+05	6.11E+03	4.10E+03	8.68E+03	6.92E+05	5.25E+05	7.87E+05	6.31E+05	3.98E+05	4.01E+05	1.32E+04	6.81E+05	3.42E+04

TABLE 7 (continued)

Economic Cost ($)	Probability of Exceedence, Milk Disposal Cost (2016 Dollars, Assuming 7% Inflation Rate)																
	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+06	5.44E-01		4.09E-02	1.37E-03	2.98E-01				4.58E-01	3.50E-01	5.34E-01	4.46E-01	2.72E-01	2.72E-01		4.71E-01	
2.00E+06	2.87E-01		6.47E-04		1.09E-01				2.35E-01	1.29E-01	2.72E-01	1.92E-01	8.38E-02	8.47E-02		2.30E-01	
3.00E+06	1.38E-01				2.83E-02				8.47E-02	3.29E-02	1.32E-01	6.02E-02	1.43E-02	1.44E-02		8.96E-02	
5.00E+06	2.83E-04										1.65E-04						
7.00E+06																	
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1.00E+12																	
Mean	1.50E+06	3.59E+04	2.29E+05	1.20E+05	8.96E+05	1.12E+04	7.54E+03	1.60E+04	1.27E+06	9.66E+05	1.45E+06	1.16E+06	7.32E+05	7.38E+05	2.43E+04	1.25E+06	6.29E+04

TABLE 7 (continued)

Economic	Probability of Exceedence, Crop Disposal Cost (2016 Dollars, Assuming 3% Inflation Rate)																
Cost ($)	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+06	1.00E+00	5.04E-01	8.19E-01	5.87E-01	1.00E+00	3.75E-01	1.47E-01	5.25E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	4.26E-01	1.00E+00	5.72E-01
2.00E+06	1.00E+00	4.21E-01	7.15E-01	4.99E-01	1.00E+00	5.19E-02	3.65E-02	4.10E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	2.26E-01	1.00E+00	5.06E-01
3.00E+06	1.00E+00	3.99E-01	6.86E-01	4.66E-01	1.00E+00	3.35E-03	3.33E-02	3.56E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.98E-01	9.98E-01	1.79E-01	1.00E+00	4.68E-01
5.00E+06	1.00E+00	1.93E-01	5.06E-01	3.16E-01	1.00E+00	6.48E-05	3.44E-05	1.29E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.85E-01	9.85E-01	1.59E-02	1.00E+00	3.38E-01
7.00E+06	1.00E+00	1.80E-01	4.84E-01	2.54E-01	9.94E-01			6.80E-02	1.00E+00	9.94E-01	1.00E+00	1.00E+00	9.59E-01	9.59E-01	6.22E-03	1.00E+00	2.55E-01
1.00E+07	1.00E+00	7.00E-02	3.87E-01	1.16E-01	9.79E-01			4.07E-03	1.00E+00	9.76E-01	1.00E+00	9.99E-01	8.93E-01	8.95E-01		1.00E+00	1.39E-01
2.00E+07	9.93E-01	6.65E-03	2.29E-01	2.15E-02	8.95E-01				9.78E-01	9.13E-01	1.00E+00	9.58E-01	6.14E-01	6.14E-01		9.71E-01	1.26E-02
3.00E+07	9.48E-01		1.16E-02		6.62E-01				8.74E-01	7.04E-01	9.62E-01	8.52E-01	5.19E-01	5.19E-01		8.15E-01	
5.00E+07	6.92E-01				2.91E-01				5.44E-01	4.11E-01	6.84E-01	5.46E-01	2.93E-01	3.01E-01		5.30E-01	
7.00E+07	4.42E-01				7.97E-02				3.53E-01	1.78E-01	4.66E-01	4.05E-01	1.14E-01	1.06E-01		3.65E-01	
1.00E+08	2.05E-01				1.30E-02				9.64E-02	2.39E-02	2.02E-01	8.21E-02	1.95E-03	1.95E-03		1.31E-01	
2.00E+08																	
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1.00E+12																	
Mean	7.21E+07	3.18E+06	9.85E+06	4.35E+06	4.16E+07	7.32E+05	4.92E+05	2.27E+06	6.05E+07	4.70E+07	7.17E+07	6.08E+07	3.65E+07	3.65E+07	1.30E+06	6.02E+07	4.28E+06

TABLE 7 (continued)

Economic Cost ($)	Probability of Exceedence, Crop Disposal Cost (2016 Dollars, Assuming 7% Inflation Rate)																
	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+06	1.00E+00	6.01E-01	9.35E-01	7.46E-01	1.00E+00	5.04E-01	3.53E-01	5.43E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	4.89E-01	1.00E+00	6.84E-01
2.00E+06	1.00E+00	4.93E-01	7.83E-01	5.55E-01	1.00E+00	3.37E-01	9.19E-02	5.18E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	4.10E-01	1.00E+00	5.44E-01
3.00E+06	1.00E+00	4.33E-01	7.21E-01	5.21E-01	1.00E+00	1.44E-01	3.85E-02	4.65E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	2.96E-01	1.00E+00	5.20E-01
5.00E+06	1.00E+00	4.07E-01	6.88E-01	4.74E-01	1.00E+00	6.90E-03	3.33E-02	3.62E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.99E-01	9.99E-01	1.83E-01	1.00E+00	4.75E-01
7.00E+06	1.00E+00	3.40E-01	5.62E-01	4.47E-01	1.00E+00	1.11E-03	1.19E-03	2.96E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.95E-01	9.95E-01	1.25E-01	1.00E+00	4.43E-01
1.00E+07	1.00E+00	1.91E-01	5.00E-01	2.74E-01	9.99E-01	1.22E-06	9.80E-07	8.63E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.78E-01	9.78E-01	1.04E-02	1.00E+00	2.98E-01
2.00E+07	1.00E+00	6.69E-02	3.67E-01	9.85E-02	9.72E-01			1.96E-03	1.00E+00	9.68E-01	1.00E+00	9.98E-01	8.76E-01	8.78E-01		1.00E+00	1.22E-01
3.00E+07	9.97E-01	1.23E-02	2.69E-01	3.11E-02	9.34E-01				9.94E-01	9.33E-01	1.00E+00	9.81E-01	7.23E-01	7.23E-01		9.84E-01	2.28E-02
5.00E+07	9.71E-01		4.26E-02		7.47E-01				9.07E-01	7.89E-01	9.70E-01	9.06E-01	5.32E-01	5.32E-01		8.81E-01	2.28E-04
7.00E+07	8.79E-01		6.68E-05		4.85E-01				7.42E-01	5.49E-01	8.82E-01	6.85E-01	4.58E-01	4.58E-01		6.57E-01	
1.00E+08	6.34E-01				2.52E-01				5.04E-01	3.69E-01	6.22E-01	5.21E-01	2.38E-01	2.41E-01		5.02E-01	
2.00E+08	1.33E-01				1.29E-02				4.86E-02	1.70E-03	1.39E-01	4.83E-02	6.28E-04	6.28E-04		9.34E-02	
3.00E+08	5.71E-03										5.51E-03						
5.00E+08																	
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1.00E+12																	
Mean	1.33E+08	5.86E+06	1.81E+07	8.01E+06	7.65E+07	1.35E+06	9.04E+05	4.17E+06	1.11E+08	8.65E+07	1.32E+08	1.12E+08	6.71E+07	6.72E+07	2.38E+06	1.11E+08	7.87E+06

TABLE 7 (continued)

Area	Probability of Exceedence, Farm Decontamination (Hectares)																
Hectares	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+03	1.00E+00	1.22E-01	8.55E-01	2.11E-01	1.00E+00			2.48E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00		1.00E+00	2.12E-01
2.00E+03	1.00E+00	1.09E-01	7.60E-01	1.47E-01	1.00E+00			5.47E-04	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00		1.00E+00	1.00E-01
3.00E+03	1.00E+00	2.38E-03	4.79E-01	1.53E-02	1.00E+00				1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00		1.00E+00	7.09E-03
5.00E+03	1.00E+00	8.73E-04	3.34E-01	4.42E-03	9.97E-01				1.00E+00	9.99E-01	1.00E+00	1.00E+00	9.86E-01	9.86E-01		1.00E+00	
7.00E+03	1.00E+00	1.00E-04	1.69E-01	1.18E-03	9.85E-01				1.00E+00	9.93E-01	1.00E+00	1.00E+00	9.58E-01	9.58E-01		1.00E+00	
1.00E+04	1.00E+00		6.52E-02		9.61E-01				9.99E-01	9.84E-01	1.00E+00	1.00E+00	8.84E-01	8.85E-01		9.95E-01	
2.00E+04	9.83E-01		3.50E-03		7.35E-01				9.74E-01	8.34E-01	9.97E-01	9.77E-01	5.46E-01	5.49E-01		9.28E-01	
3.00E+04	8.83E-01				4.54E-01				7.94E-01	4.92E-01	9.52E-01	8.93E-01	1.26E-01	1.25E-01		6.85E-01	
5.00E+04	3.88E-01				5.93E-02				1.46E-01	3.34E-02	4.70E-01	2.59E-01	2.39E-03	2.39E-03		1.74E-01	
7.00E+04	7.42E-02				8.01E-03				2.25E-03	9.96E-05	8.17E-02	4.48E-02				2.13E-02	
1.00E+05	4.73E-03										4.41E-03						
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7.00E+08																	
1.00E+09																	
Mean	4.71E+04	7.47E+02	4.17E+03	9.59E+02	2.91E+04	1.43E+02	1.07E+02	4.55E+02	3.87E+04	3.02E+04	5.07E+04	4.32E+04	2.10E+04	2.10E+04	3.49E+02	3.76E+04	9.06E+02

TABLE 7 (continued)

Population Impacted	Probability of Exceedence, Population Decontamination (Individuals)																
	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+03	1.00E+00	7.67E-01	9.79E-01	8.51E-01	1.00E+00	2.27E-01	1.47E-01	6.68E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	4.76E-01	1.00E+00	8.60E-01
2.00E+03	1.00E+00	5.99E-01	9.41E-01	7.07E-01	1.00E+00	1.00E-02	1.78E-02	4.09E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	3.09E-01	1.00E+00	7.23E-01
3.00E+03	1.00E+00	5.14E-01	9.11E-01	5.81E-01	1.00E+00		1.58E-02	2.98E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	2.60E-01	1.00E+00	6.02E-01
5.00E+03	1.00E+00	2.51E-01	8.32E-01	3.62E-01	1.00E+00		4.56E-03	1.44E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.19E-01	1.00E+00	3.69E-01
7.00E+03	1.00E+00	1.87E-01	7.62E-01	2.50E-01	9.99E-01		2.06E-03	7.51E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	8.88E-02	1.00E+00	2.42E-01
1.00E+04	1.00E+00	1.09E-01	6.45E-01	1.49E-01	9.98E-01		1.18E-03	3.72E-02	1.00E+00	9.99E-01	1.00E+00	1.00E+00	9.99E-01	9.99E-01	3.04E-02	1.00E+00	1.39E-01
2.00E+04	1.00E+00	1.85E-02	3.49E-01	3.34E-02	9.74E-01			1.92E-03	9.99E-01	9.97E-01	1.00E+00	1.00E+00	9.85E-01	9.85E-01		9.98E-01	2.52E-02
3.00E+04	9.98E-01	1.81E-02	2.22E-01	2.63E-02	9.33E-01			6.81E-05	9.97E-01	9.84E-01	1.00E+00	9.97E-01	9.54E-01	9.54E-01		9.92E-01	1.58E-02
5.00E+04	9.91E-01	2.45E-04	1.05E-01	1.44E-03	8.24E-01				9.83E-01	9.24E-01	9.98E-01	9.87E-01	8.13E-01	8.13E-01		9.59E-01	5.21E-04
7.00E+04	9.58E-01	1.45E-04	7.73E-02	5.83E-04	7.05E-01				9.43E-01	8.06E-01	9.88E-01	9.57E-01	6.49E-01	6.51E-01		9.01E-01	
1.00E+05	8.66E-01	7.20E-05	5.10E-02	3.25E-04	5.46E-01				8.01E-01	6.16E-01	9.44E-01	8.60E-01	4.52E-01	4.51E-01		7.73E-01	
2.00E+05	4.99E-01		6.34E-03		2.43E-01				3.91E-01	2.55E-01	5.87E-01	4.58E-01	1.49E-01	1.51E-01		3.78E-01	
3.00E+05	2.75E-01				1.12E-01				1.86E-01	1.08E-01	3.21E-01	2.26E-01	5.48E-02	5.47E-02		1.96E-01	
5.00E+05	6.52E-02				1.21E-02				2.42E-02	4.20E-03	8.34E-02	4.88E-02	1.25E-03	1.25E-03		3.68E-02	
7.00E+05	5.36E-03				1.60E-04						2.79E-03	5.07E-06					
1.00E+06																	
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1.00E+09																	
Mean	2.40E+05	4.82E+03	2.54E+04	6.05E+03	1.46E+05	5.97E+02	4.97E+02	2.76E+03	1.99E+05	1.54E+05	2.65E+05	2.22E+05	1.18E+05	1.18E+05	2.29E+03	1.98E+05	5.76E+03

TABLE 7 (continued)

Area	Probability of Exceedence, Farm Interdiction (Hectares)																
Hectares	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+03	1.00E+00	5.01E-01	9.61E-01	6.34E-01	1.00E+00	1.96E-01	3.90E-02	4.98E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	3.32E-01	1.00E+00	6.05E-01
2.00E+03	1.00E+00	4.57E-01	8.98E-01	5.45E-01	1.00E+00	3.79E-03	3.33E-02	3.60E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.82E-01	1.00E+00	5.20E-01
3.00E+03	1.00E+00	2.77E-01	7.47E-01	4.26E-01	1.00E+00	2.37E-04	9.95E-05	2.43E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	7.38E-02	1.00E+00	4.27E-01
5.00E+03	1.00E+00	1.81E-01	6.40E-01	2.56E-01	1.00E+00			6.81E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.98E-01	9.98E-01	6.22E-03	1.00E+00	2.54E-01
7.00E+03	1.00E+00	1.03E-01	4.77E-01	1.61E-01	9.97E-01			1.29E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.89E-01	9.89E-01	1.79E-03	1.00E+00	1.63E-01
1.00E+04	1.00E+00	5.48E-02	3.38E-01	7.45E-02	9.77E-01			1.12E-04	9.99E-01	1.00E+00	1.00E+00	1.00E+00	9.65E-01	9.65E-01		1.00E+00	6.12E-02
2.00E+04	9.91E-01	1.33E-03	1.14E-01	6.34E-03	8.30E-01				9.91E-01	9.35E-01	9.97E-01	9.88E-01	8.13E-01	8.15E-01		9.85E-01	1.58E-03
3.00E+04	9.41E-01		4.04E-04		6.06E-01				9.09E-01	7.54E-01	9.75E-01	9.50E-01	5.39E-01	5.39E-01		8.68E-01	
5.00E+04	6.42E-01				1.71E-01				4.68E-01	2.83E-01	6.93E-01	5.56E-01	1.67E-01	1.65E-01		4.66E-01	
7.00E+04	3.08E-01				4.53E-02				2.29E-01	9.59E-02	3.18E-01	2.35E-01	4.43E-02	4.46E-02		2.34E-01	
1.00E+05	1.12E-01				7.37E-03				2.80E-02	3.57E-04	7.44E-02	2.53E-02	2.07E-04	2.07E-04		4.97E-02	
2.00E+05																	
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1.00E+09																	
Mean	6.27E+04	2.68E+03	9.15E+03	3.59E+03	3.60E+04	5.61E+02	3.77E+02	1.77E+03	5.37E+04	4.29E+04	6.32E+04	5.58E+04	3.47E+04	3.47E+04	1.04E+03	5.38E+04	3.45E+03

TABLE 7 (continued)

Population Impacted	Probability of Exceedence, Population Interdiction (Individuals)																
	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+03	1.00E+00	7.67E-01	9.79E-01	8.51E-01	1.00E+00	2.27E-01	1.47E-01	6.68E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	4.76E-01	1.00E+00	8.60E-01
2.00E+03	1.00E+00	5.99E-01	9.41E-01	7.07E-01	1.00E+00	1.00E-02	1.78E-02	4.09E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	3.09E-01	1.00E+00	7.23E-01
3.00E+03	1.00E+00	5.14E-01	9.11E-01	5.81E-01	1.00E+00		1.58E-02	2.98E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	2.60E-01	1.00E+00	6.02E-01
5.00E+03	1.00E+00	2.51E-01	8.32E-01	3.62E-01	1.00E+00		4.56E-03	1.44E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.19E-01	1.00E+00	3.69E-01
7.00E+03	1.00E+00	1.87E-01	7.62E-01	2.50E-01	9.99E-01		2.06E-03	7.51E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	8.88E-02	1.00E+00	2.42E-01
1.00E+04	1.00E+00	1.09E-01	6.45E-01	1.49E-01	9.98E-01		1.18E-03	3.72E-02	1.00E+00	9.99E-01	1.00E+00	1.00E+00	9.99E-01	9.99E-01	3.04E-02	1.00E+00	1.39E-01
2.00E+04	1.00E+00	1.85E-02	3.49E-01	3.34E-02	9.74E-01			1.92E-03	9.99E-01	9.97E-01	1.00E+00	1.00E+00	9.85E-01	9.85E-01		9.98E-01	2.52E-02
3.00E+04	9.98E-01	1.81E-02	2.22E-01	2.63E-02	9.33E-01			6.81E-05	9.97E-01	9.84E-01	1.00E+00	9.97E-01	9.54E-01	9.54E-01		9.92E-01	1.58E-02
5.00E+04	9.91E-01	2.45E-04	1.05E-01	1.44E-03	8.24E-01				9.83E-01	9.24E-01	9.98E-01	9.87E-01	8.13E-01	8.13E-01		9.59E-01	5.21E-04
7.00E+04	9.58E-01	1.45E-04	7.73E-02	5.83E-04	7.05E-01				9.43E-01	8.06E-01	9.88E-01	9.57E-01	6.49E-01	6.51E-01		9.01E-01	
1.00E+05	8.66E-01	7.20E-05	5.10E-02	3.25E-04	5.46E-01				8.01E-01	6.16E-01	9.44E-01	8.60E-01	4.52E-01	4.51E-01		7.73E-01	
2.00E+05	4.99E-01		6.34E-03		2.43E-01				3.91E-01	2.55E-01	5.87E-01	4.58E-01	1.49E-01	1.51E-01		3.78E-01	
3.00E+05	2.75E-01				1.12E-01				1.86E-01	1.08E-01	3.21E-01	2.26E-01	5.48E-02	5.47E-02		1.96E-01	
5.00E+05	6.52E-02				1.21E-02				2.42E-02	4.20E-03	8.34E-02	4.88E-02	1.25E-03	1.25E-03		3.68E-02	
7.00E+05	5.36E-03				1.60E-04						2.79E-03	5.07E-06					
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7.00E+07																	
1.00E+08																	
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7.00E+08																	
1.00E+09																	
Mean	2.40E+05	4.82E+03	2.54E+04	6.05E+03	1.46E+05	5.97E+02	4.97E+02	2.76E+03	1.99E+05	1.54E+05	2.65E+05	2.22E+05	1.18E+05	1.18E+05	2.29E+03	1.98E+05	5.76E+03

TABLE 7 (continued)

Area	Probability of Exceedence, Farm Condemnation (Hectares)																
Hectares	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+03	7.81E-01				5.83E-01				3.22E-01	1.84E-01	8.94E-01	6.64E-01				4.98E-01	
2.00E+03	4.76E-01				4.72E-01				3.77E-02	1.09E-01	7.07E-01	5.89E-01				4.30E-01	
3.00E+03	2.71E-01				1.20E-01				5.69E-03	1.21E-02	5.21E-01	1.28E-01				6.18E-02	
5.00E+03	3.83E-02				4.17E-02					8.91E-04	1.63E-01	8.19E-02				2.86E-02	
7.00E+03	1.52E-02				1.55E-02					1.11E-04	7.21E-02	3.05E-02				1.13E-02	
1.00E+04	5.25E-03				3.65E-03						2.77E-02	7.06E-03				1.63E-03	
2.00E+04											1.18E-04						
3.00E+04																	
5.00E+04																	
7.00E+04																	
1.00E+05																	
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3.00E+08																	
5.00E+08																	
7.00E+08																	
1.00E+09																	
Mean	2.18E+03	5.20E+00	3.21E+01	6.77E+00	1.84E+03	2.08E-01	3.28E-01	6.80E+00	9.03E+02	8.96E+02	3.30E+03	2.28E+03	2.28E+02	2.29E+02	1.65E+00	1.68E+03	5.84E+00

TABLE 7 (continued)

Population Impacted	Probability of Exceedence, Population Condemnation (Individuals)																
	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+03	9.75E-01		6.35E-05		9.09E-01				8.83E-01	8.67E-01	9.63E-01	9.35E-01	3.73E-01	3.73E-01		9.11E-01	
2.00E+03	9.29E-01				8.22E-01				7.54E-01	7.30E-01	8.98E-01	8.64E-01	1.00E-01	1.01E-01		8.02E-01	
3.00E+03	8.88E-01				7.77E-01				6.48E-01	6.29E-01	8.40E-01	7.91E-01	6.01E-02	6.03E-02		7.20E-01	
5.00E+03	7.89E-01				6.09E-01				4.13E-01	3.49E-01	7.00E-01	6.67E-01	1.79E-02	1.80E-02		5.60E-01	
7.00E+03	6.63E-01				5.34E-01				2.84E-01	2.36E-01	5.29E-01	5.89E-01	1.33E-02	1.34E-02		4.65E-01	
1.00E+04	4.84E-01				3.67E-01				1.64E-01	1.40E-01	3.38E-01	4.04E-01	7.58E-03	7.66E-03		3.06E-01	
2.00E+04	1.85E-01				1.33E-01				3.01E-02	2.46E-02	9.35E-02	1.52E-01				1.00E-01	
3.00E+04	1.03E-01				9.95E-02				7.96E-03	1.84E-02	1.87E-02	1.28E-01				8.69E-02	
5.00E+04	3.07E-02				1.68E-02				1.00E-03	7.39E-04	3.92E-03	2.39E-02				1.06E-02	
7.00E+04	8.09E-03				8.51E-03					1.70E-04	2.17E-06	1.69E-02				6.54E-03	
1.00E+05	4.87E-03				5.04E-03					7.92E-05		1.02E-02				4.28E-03	
2.00E+05	2.82E-05				3.01E-06							5.47E-04				2.08E-04	
3.00E+05																	
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2.00E+08																	
3.00E+08																	
5.00E+08																	
7.00E+08																	
1.00E+09																	
Mean	1.45E+04	2.48E+01	1.49E+02	3.34E+01	1.20E+04	3.52E-01	1.15E+00	9.39E-01	6.08E+03	5.84E+03	9.57E+03	1.39E+04	1.12E+03	1.12E+03	3.58E+00	1.06E+04	1.23E+01

TABLE 7 (continued)

Area Hectares	Probability of Exceedence, Milk Disposal Area (Hectares)																
	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+03	1.00E+00	4.05E-01	7.03E-01	5.35E-01	1.00E+00	3.59E-01	1.38E-01	4.21E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.99E-01	9.99E-01	4.47E-01	1.00E+00	5.24E-01
2.00E+03	1.00E+00	3.58E-01	6.78E-01	5.19E-01	1.00E+00	8.10E-02	9.92E-02	2.50E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.84E-01	9.84E-01	2.88E-01	1.00E+00	4.79E-01
3.00E+03	1.00E+00	2.14E-01	5.37E-01	4.95E-01	1.00E+00	3.30E-02	9.43E-04	1.32E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.75E-01	9.75E-01	2.09E-01	1.00E+00	4.45E-01
5.00E+03	1.00E+00	1.35E-01	5.23E-01	3.73E-01	9.84E-01	2.60E-04		3.04E-03	1.00E+00	9.87E-01	1.00E+00	1.00E+00	9.20E-01	9.20E-01	7.03E-02	1.00E+00	3.28E-01
7.00E+03	1.00E+00	7.73E-02	4.84E-01	3.20E-01	9.64E-01	1.38E-04		4.82E-04	1.00E+00	9.63E-01	1.00E+00	9.95E-01	8.19E-01	8.20E-01	3.40E-02	9.92E-01	2.07E-01
1.00E+04	1.00E+00	4.11E-02	4.21E-01	2.44E-01	9.47E-01				9.98E-01	9.27E-01	9.99E-01	9.74E-01	7.07E-01	7.08E-01	7.68E-03	9.69E-01	9.66E-02
2.00E+04	9.58E-01	1.35E-04	2.16E-01	4.02E-02	7.91E-01				9.00E-01	7.65E-01	9.47E-01	8.54E-01	5.52E-01	5.52E-01		8.62E-01	1.63E-03
3.00E+04	8.05E-01		3.34E-02	2.76E-04	5.23E-01				6.74E-01	5.56E-01	7.81E-01	6.00E-01	5.06E-01	5.08E-01		6.13E-01	
5.00E+04	5.33E-01		7.52E-04		2.22E-01				4.71E-01	3.17E-01	5.13E-01	4.60E-01	2.31E-01	2.36E-01		4.75E-01	
7.00E+04	3.68E-01				7.38E-02				3.09E-01	1.21E-01	3.90E-01	2.57E-01	6.76E-02	6.83E-02		2.97E-01	
1.00E+05	1.54E-01				9.29E-03				7.16E-02	1.89E-02	1.38E-01	4.56E-02	4.23E-04	4.64E-04		9.40E-02	
2.00E+05																	
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7.00E+08																	
1.00E+09																	
Mean	6.15E+04	1.96E+03	1.02E+04	5.59E+03	3.67E+04	7.70E+02	5.18E+02	1.09E+03	5.27E+04	3.99E+04	6.00E+04	4.85E+04	3.13E+04	3.15E+04	1.52E+03	5.18E+04	3.56E+03

TABLE 7 (continued)

Area	Probability of Exceedence, Crop Disposal Area (Hectares)																
Hectares	ENMKCTT	MIALF	NIH	NIHNSP	OIA	OIALF	PID	PIDNSP	PIHDEP	PIHDEPV	PIHDHB	PIHDLF	PIHDLV	PIHNDP	PJH	PJHNSP	PLF
1.00E+03	1.00E+00	4.44E-01	7.27E-01	5.30E-01	1.00E+00	1.96E-01	3.90E-02	4.90E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	3.33E-01	1.00E+00	5.23E-01
2.00E+03	1.00E+00	4.04E-01	6.87E-01	4.70E-01	1.00E+00	3.79E-03	3.33E-02	3.60E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.99E-01	9.99E-01	1.82E-01	1.00E+00	4.74E-01
3.00E+03	1.00E+00	2.78E-01	5.23E-01	4.17E-01	1.00E+00	2.37E-04	9.95E-05	2.43E-01	1.00E+00	1.00E+00	1.00E+00	1.00E+00	9.92E-01	9.92E-01	7.39E-02	1.00E+00	4.22E-01
5.00E+03	1.00E+00	1.81E-01	4.82E-01	2.54E-01	9.94E-01			6.81E-02	1.00E+00	9.94E-01	1.00E+00	1.00E+00	9.59E-01	9.59E-01	6.22E-03	1.00E+00	2.54E-01
7.00E+03	1.00E+00	1.03E-01	4.07E-01	1.60E-01	9.82E-01			1.29E-02	1.00E+00	9.78E-01	1.00E+00	1.00E+00	8.96E-01	8.97E-01	1.79E-03	1.00E+00	1.63E-01
1.00E+04	1.00E+00	5.48E-02	3.15E-01	7.45E-02	9.48E-01			1.12E-04	9.99E-01	9.47E-01	1.00E+00	9.92E-01	8.01E-01	8.01E-01		9.99E-01	6.12E-02
2.00E+04	9.75E-01	1.33E-03	1.12E-01	6.34E-03	7.96E-01				9.26E-01	8.15E-01	9.82E-01	9.20E-01	5.50E-01	5.50E-01		8.92E-01	1.58E-03
3.00E+04	8.68E-01		4.22E-04		5.05E-01				7.51E-01	5.69E-01	8.69E-01	6.76E-01	4.65E-01	4.65E-01		6.61E-01	
5.00E+04	5.25E-01				1.69E-01				4.28E-01	2.74E-01	5.33E-01	4.59E-01	1.70E-01	1.68E-01		4.37E-01	
7.00E+04	3.09E-01				4.88E-02				2.38E-01	1.01E-01	3.36E-01	2.49E-01	4.61E-02	4.64E-02		2.43E-01	
1.00E+05	1.18E-01				7.50E-03				3.15E-02	2.08E-03	9.23E-02	3.57E-02	2.26E-04	2.26E-04		5.44E-02	
2.00E+05																	
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3.00E+08																	
5.00E+08																	
7.00E+08																	
1.00E+09																	
Mean	5.98E+04	2.41E+03	7.83E+03	3.30E+03	3.44E+04	5.20E+02	3.50E+02	1.63E+03	4.98E+04	3.89E+04	5.90E+04	4.99E+04	2.97E+04	2.97E+04	9.24E+02	4.97E+04	3.19E+03

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TRAINING AND DEVELOPMENT ATTENDANCE RECORD

PROCEDURE NUMBER, REVISION & DESCRIPTION

NEDP-2, Revision 5
Design Process / Calculation Control

METHOD OF TRAINING & REASON FOR ACTIVITY

X Reading
ESP Training
Informal
Formal Classroom

X Mandatory
Skills Enhancement
Personal/Professional Development
X Job Qualifying/Certification

ESP CONTINUING TRAINING

X BFN X SQN X WBN

MANAGER / INSTRUCTOR SIGNATURE
(CLASSROOM ONLY)

N/A

NAME (First, M.I., Last)	SIGNATURE	SOCIAL SECURITY NUMBER	COMPANY NAME & ADDRESS	AREA CODE & PHONE NO.	DATE TRAINED
KEITH WOODARD	[illegible]	569-52-5844	ABS CONSULTING	301-907-9100	1/7/02
Thomas E. Fosternacht	[illegible]	579-70-9899	ABS Consulting	301-907-9100	1/7/02
Jackie Lewis	Jackie Lewis	529-68-7519	ABS Consulting	301.907.9100	1/11/02