ARGONNE NATIONAL LABORATORY
9700 SOUTH CASS AVENUE, ARGONNE, ILLINOIS 60439

TELEPHONE 708/252-3243
FAX NUMBER 708/252-4336

August 20, 1983

Karen Reed
U.S. Department of Energy
Weldon Spring Site
Remedial Action Project
7295 Highway 94 South
St. Charles, MO 63304

Dear Ms. Reed:

Enclosed is a summary of the informal meeting held on-site with representatives of the St. Charles Countians Against Hazardous Waste on March 19, 1993. The purpose of the meeting was to clarify comments received from these individuals on the remedial investigation/feasibility study-environmental impact statement (RI/FS-EIS) for remedial action at the chemical plant area, which was issued in November 1992. Attached are the list of attendees and the viewgraphs used to facilitate discussions. This information is being provided for inclusion in the administrative record for this action. If you have any questions, please do not hesitate to give me a call.

With kind regards,

Margaret

Margaret MacDonell
Environmental Assessment Division

Enclosures: as stated

cc (w/o enclosures):

DOE
S. McCracken
J. Van Fossen

PMC
J. Carman
D. Carpenter
T. French
L. Gonzales
S. Green

ANL
D. Blunt
Y. Chang
L. Durham
J. Peterson
M. Picel

SUBJECT: Informal Meeting with the St. Charles Countians Against Hazardous Waste

An informal meeting was held at the Weldon Spring site on March 19, 1993, with several individuals representing the St. Charles Countians Against Hazardous Waste (SCCAHW); the list of attendees is provided as Attachment 1. The purpose of this meeting was to clarify comments made by these individuals on the remedial investigation/feasibility study-environmental impact statement (RI/FS-EIS) for remedial action at the chemical plant area, which was issued in November 1992. The intent of this informal clarification was to be sure that DOE understood the underlying concerns of those commenters, so that appropriate responses would be developed. These comments had been received during the public comment period for these documents, in accordance with the public participation process of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended.

Presentations were made by the following members of the Weldon Spring site team to facilitate the clarification of comment issues:

John Peterson, Argonne National Laboratory *(radon modeling)*

Don Carpenter, MK-Ferguson Company *(engineering controls for radon)*

Young-Soo Chang, Argonne National Laboratory *(air pathway modeling)*

Terry French, Jacobs Engineering Group *(site response planning)*

The viewgraphs used in these presentations are included as Attachment 2.

No substantive comments on the RI/FS-EIS were made by the SCCAHW or their technical reviewers at this informal meeting beyond those they had provided during the formal comment period. Because the stated objective of the meeting was to clarify comments, one of the individuals, Dr. L. Rao Ayyagari, provided supplementary text to clarify the written comments he had submitted during the formal comment period. Both comment letters from Dr. Ayyagari are included in the administrative record for this action.

This meeting was very useful and provided a better understanding of the concerns behind the comments, such that more meaningful responses could be developed. It also provided a mechanism for DOE to informally review site information for those individuals who until recently had not been as closely involved with the project as others (such as the staged process being followed for site cleanup and specific technical issues, with which others are already familiar).

Attachment 1

Attendees at the March 19, 1993 Meeting at the Weldon Spring Site

St. Charles Countians Against Hazardous Waste (SCCAHW)

L. Rao Ayyagari*
Thomas Aley*
George Farhner
Mary Halliday
Meredith Hunter
William Vaughan*

U.S. Department of Energy

Steve McCracken
Karen Reed
Jerry Van Fossen

Argonne National Laboratory

Deb Blunt
Young-Soo Chang
Lisa Durham
Margaret MacDonell
John Peterson

Project Management Contractor (MK-Ferguson Company and Jacobs Engineering Group)

Jeff Carman
Don Carpenter
Terry French
Lou Gonzales
Steve Green
Dan Hoffman

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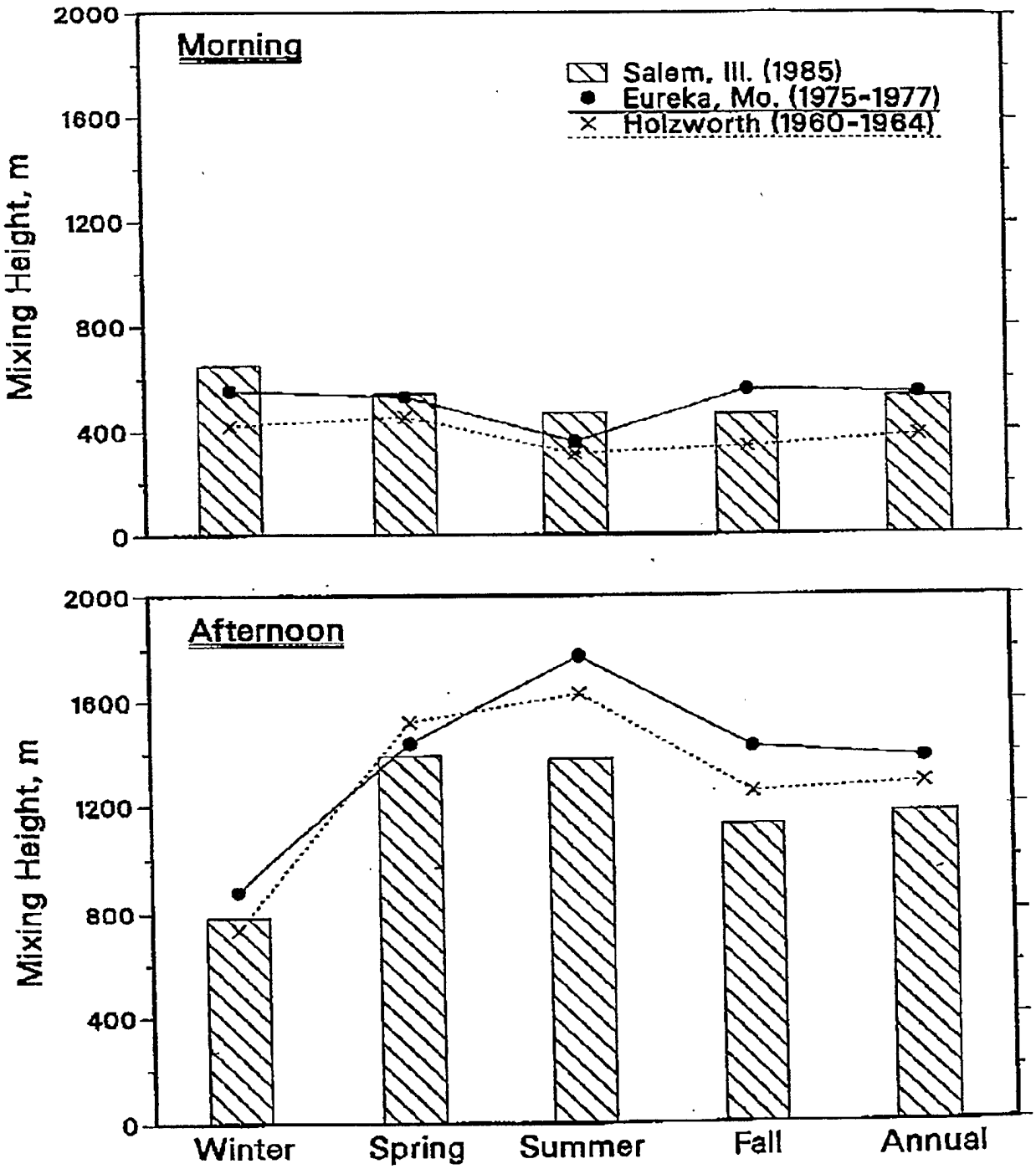
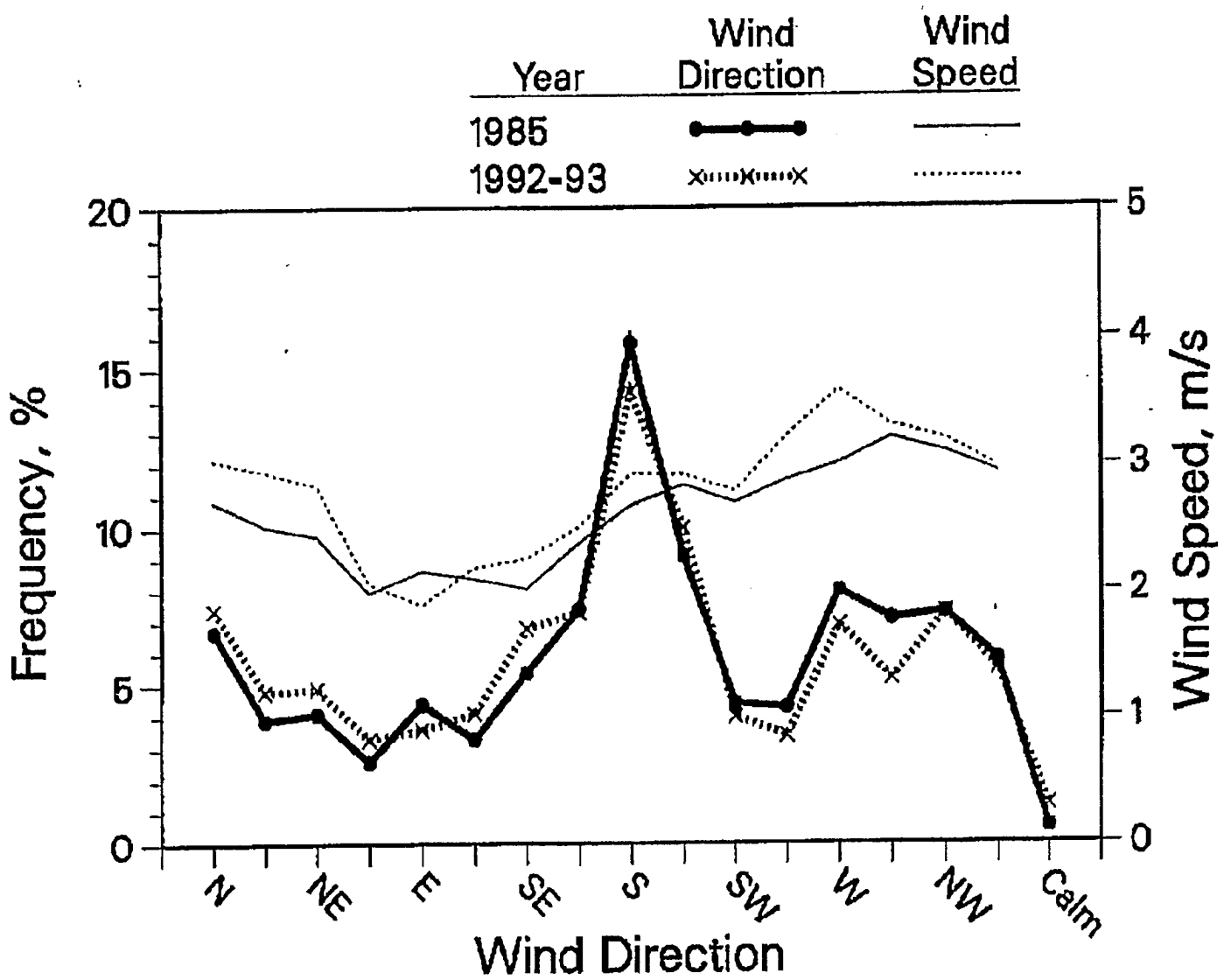
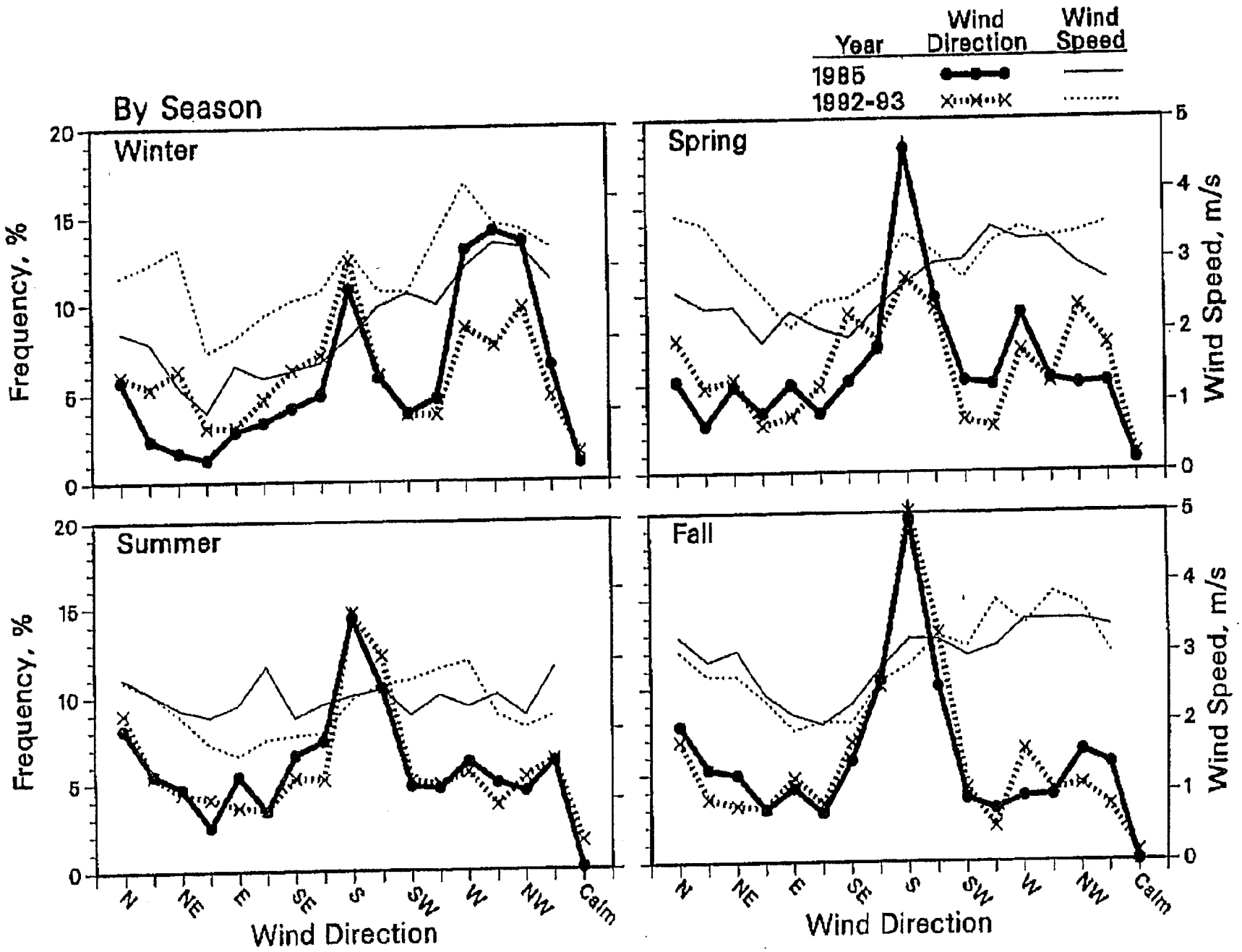
*Technical advisors who submitted written comments on behalf of SCCHAW under a Technical Assistance Grant administered by the U.S. Environmental Protection Agency, Region VII.

Attachment 2

Viewgraphs from the March 19, 1993 Meeting at the Weldon Spring Site


Morning
Salem, Ill. (1985)
Eureka, Mo. (1975-1977)
Holzworth (1960-1964)
Mixing Height, m
2000
1600
1200
800
400
0
Afternoon
Mixing Height, m
2000
1600
1200
800
400
0
Winter
Spring
Summer
Fall
Annual


Year
Wind Direction
Wind Speed
1985
1992-93
Frequency, %
Wind Speed, m/s
Wind Direction
N
NE
E
SE
S
SW
W
NW
Calm
0
5
10
15
20
0
1
2
3
4
5


By Season
Year
Wind Direction
Wind Speed
1985
1992-93
Winter
Spring
Summer
Fall
Frequency, %
Wind Speed, m/s
Wind Direction
N
NE
E
SE
S
SW
W
NW
Calm
0
5
10
15
20
1
2
3
4

OVERALL APPROACH TO AIR QUALITY MODELING

- Modeled particulate releases in detail to evaluate compliance with air quality standards (Appendix C), which are concentration limits
- Modeled radon releases separately using CAP-88
- Combined the results of these two assessments to evaluate potential health effects (Appendix F)
- Note that for radioactive contaminants such as radon, compliance is generally determined on the basis of a dose rate (as opposed to a concentration limit)

APPROACH FOR RADON MODELING

- Identified radon source terms at the site
- Used CAP-88 to model off-site concentrations of radon (this computer code is identified in EPA NESHAPs regulations as one of codes acceptable to EPA for assessing NESHAPs compliance)
- Used simplifying assumptions in a manner to ensure generally conservative estimates at Francis Howell High School
- Converted concentration (pCi/L) to working level to allow use of radon risk information in BEIR IV report
- Goal was to obtain realistic, but somewhat conservative, results

RADON SOURCE TERMS

- Two types of radon source terms
  - "steady" or continuous
  - "process" (i.e., when radium-contaminated wastes are exhumed)
- Releases were estimated from characterization data (as provided in the RI report) for each year of operation
- Total radon release is the sum of "steady" plus "process" releases for each source area for each year

STEADY RADON RELEASES

- Based on measured radium-226 concentrations
- Flux calculated using a factor of 0.68 $\frac{pCi/m^2\text{-}s}{pCi/g}$ for soil source areas [UNSCEAR 1988]
- Assumed average flux from covered soils in interim at the TSA is 5 pCi/m^2-s (must be $\leq$ 20 pCi/m^2-s; with tarp cover flux should be essentially zero)
- Assumed water cover in raffinate pits reduces flux from underlying materials by a factor of 1,000

PROCESS RADON RELEASES

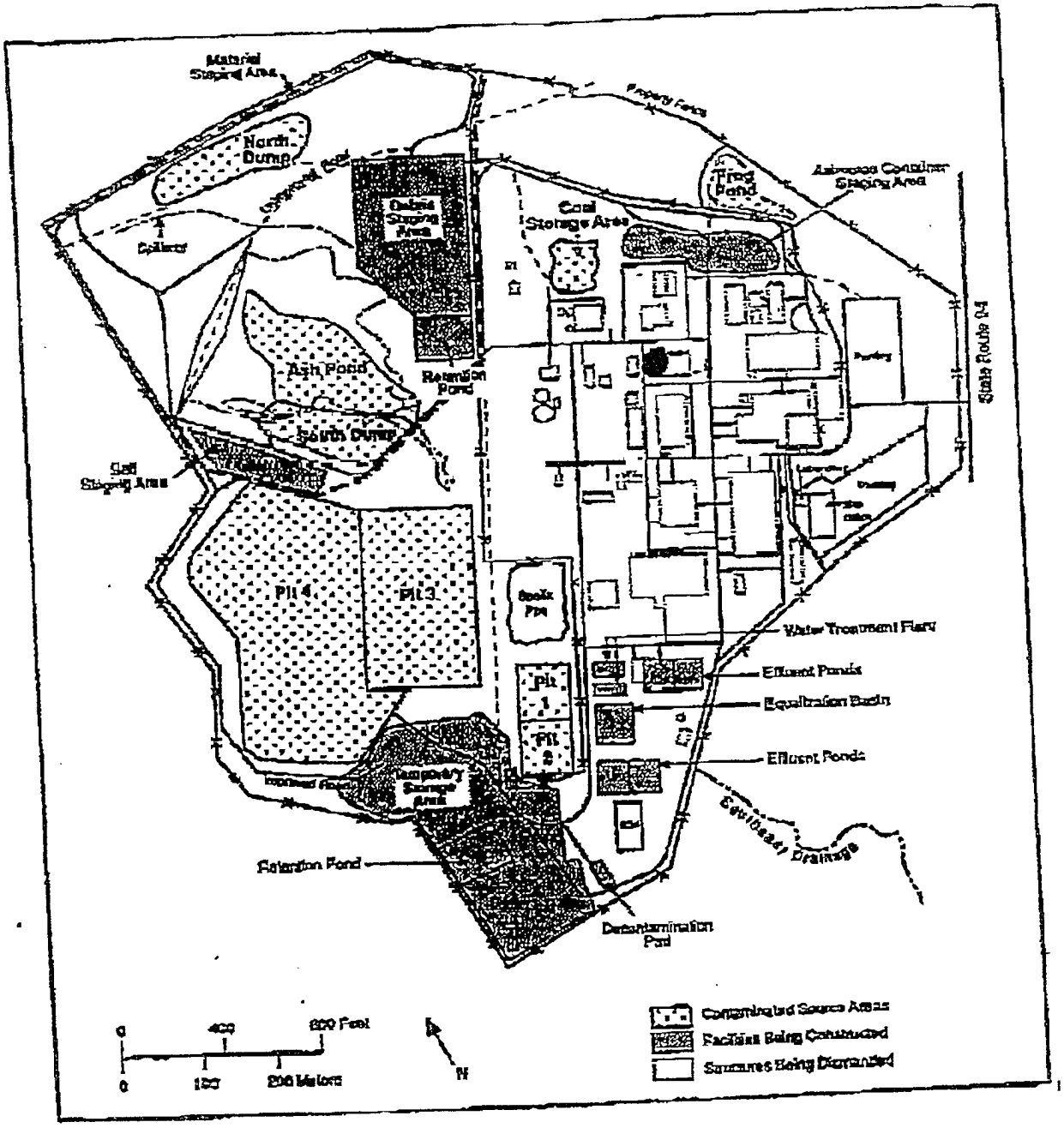
- Assumed 20% of radon gas has mitigated to interstitial pores in waste materials (based on uranium mill tailings data)
- When excavated/transferred, <u>all</u> radon available for release is assumed to be released
- Waste material is assumed to be treated/disposed of in a relatively short time following removal (half-life of radon-222 is 3.8 days)
- For vitrification, 100% of radon gas is assumed to be released

TOTAL RADON RELEASES FOR CSS ALTERNATIVE

	1993	1994	1995	1996	1997	1998	1999	2000
QY Soil in TSA Steady Process	1.10 -	2.20 -	2.20 -	2.20 -	2.20 -	1.65 0.758	0.55 0.758	- -
Raffinate Pit Sludges Steady Process	1.58 -	3.16 -	2.77 3.87	1.98 3.87	1.19 3.87	0.395 3.87	- -	- -
Clay Soil Under Pits Steady Process	0.054 -	0.108 -	0.0945 0.133	0.0675 0.133	0.0405 0.133	0.0135 0.133	- -	- -
Ash Pond Steady Process	9.70 -	19.4 -	19.4 -	19.4 -	19.4 -	19.4 -	9.70 0.0666	- -
North Dump Steady Process	0.743 0.0378	- -	- -	- -	- -	- -	- -	- -
South Dump Steady Process	4.74 -	9.48 -	9.48 -	9.48 -	4.74 0.121	- -	- -	- -
Frog Pond Steady Process	0.99 -	1.98 -	1.98 -	0.99 0.0232	- -	- -	- -	- -
Soil Around Raffinate Pits Steady Process	1.60 -	3.19 -	2.67 0.0262	2.23 0.0262	1.60 0.0262	0.957 0.0262	0.319 0.0262	- -
Soil Around Chemical Plant Buildings Steady Process	15.3 0.0148	10.2 0.0297	5.10 0.0297	- -	- -	- -	- -	- -
Busch Lakes Steady Process	- -	- -	- -	- -	- -	0.0058 -	- -	- -
TOTAL *Overall Total = 246 Ci*	55.9	49.7	46.3	40.4	33.3	27.2	11.4	

TOTAL RADON RELEASES FOR VITRIFICATION ALTERNATIVE

- Same as CSS except for the incremental release from the vitrification stack (total of 96 curies over a 4-year period)
- Total amount of radon released estimated to be 323 Ci over a 7-year period (about 46 Ci/yr)

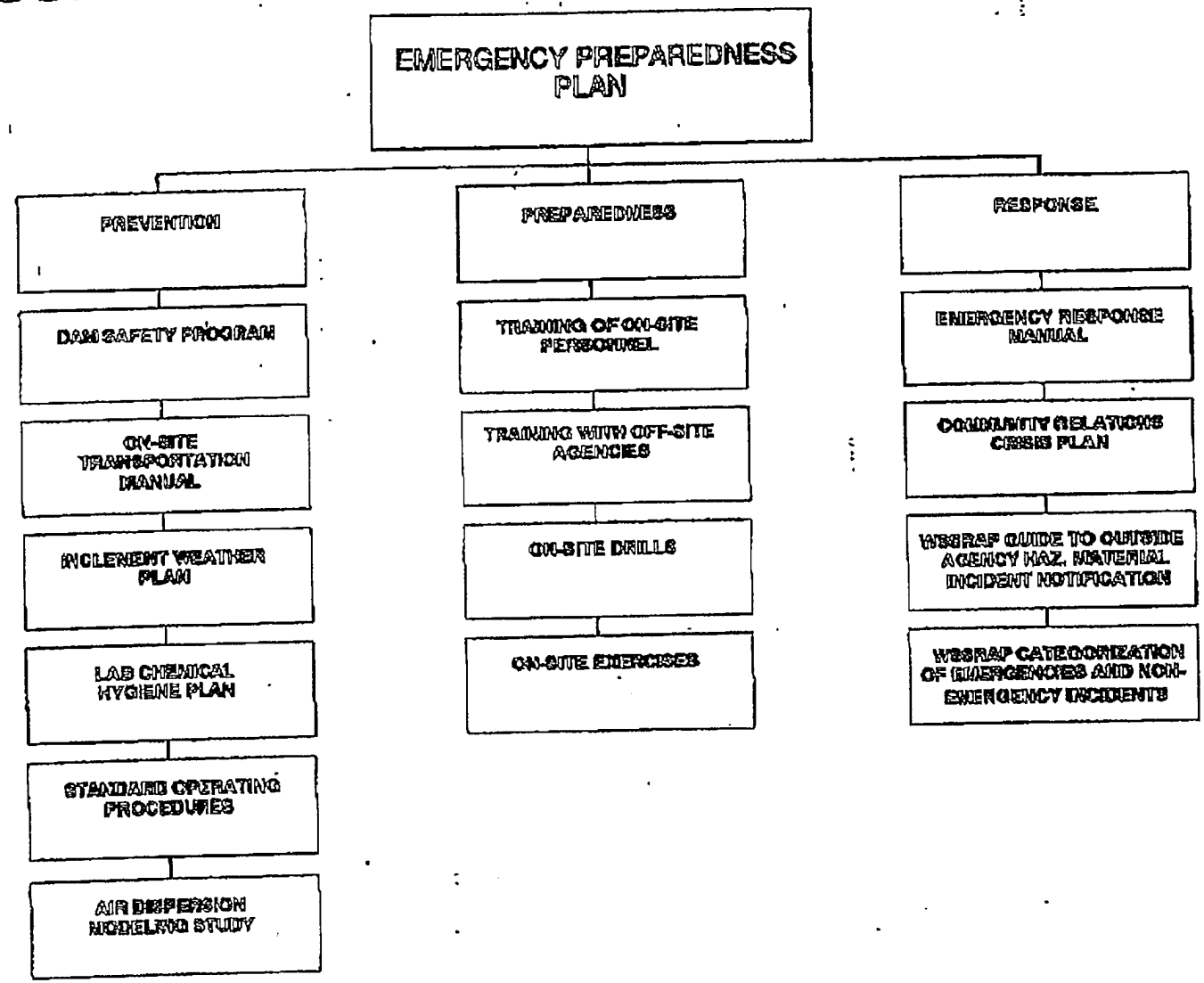


Assumed Location for Radon Releases (CAP-88 uses point sources)

RESULTS

- Radon risks are estimated to be less than 1×10^{-6} at the Francis Howell High School
- Radon risks at off-site locations are estimated to be about 2 times higher than inhalation of released radioactive particulates
- In all likelihood, no elevated radon levels will be measured at the high school

WSSRAP EMERGENCY MANAGEMENT PLAN



K002-6/92

WELDON SPRING SITE PREPAREDNESS ASSURANCE PROGRAM

KEY ELEMENTS

- ✓ PERSONNEL TRAINING AND INFORMATION EXCHANGE
- ✓ FACILITY AND EQUIPMENT INSPECTIONS
- ✓ EMERGENCY INFORMATION POSTING
- ✓ DRILLS AND EXERCISES

H3002-3/93

OFF SITE RESOURCES

- ✓ COTTLEVILLE FIRE DEPARTMENT (CONTRACTUAL AGREEMENT)
  - WILL RESPOND TO FIRE INCIDENTS
- ✓ ST. CHARLES COUNTY HAZARDOUS MATERIALS (HAZ MAT) TEAM (FIRE DEPARTMENT MUTUAL AID SYSTEM) - WILL RESPOND TO MAJOR CHEMICAL SPILL INCIDENTS
- ✓ ST. CHARLES COUNTY SHERIFF DEPARTMENT (MEMORANDUM OF UNDERSTANDING) - WILL RESPOND TO ANY POLICE MATTERS
- ✓ ST. CHARLES COUNTY AMBULANCE DISTRICT - WILL BE USED TO TRANSPORT ACCIDENT VICTIMS.
- ✓ ST. JOSEPH'S HOSPITAL IN ST. CHARLES AND ST. JOHNS MERCY MEDICAL CENTER IN CREVE COEUR - ARE THE TWO PRIMARY HOSPITALS TO BE USED IN THE EVENT OF A MEDICAL INCIDENT

INTERFACE WITH LOCAL COMMUNITY

- ✓ ON SITE AND OFF SITE EXPOS
- ✓ MEETING WITH FRANCIS HOWELL HIGH SCHOOL
- ✓ ISSUED 18 CONTROLLED COPIES OF THE WSSRAP EMERGENCY MANAGEMENT PLAN TO OFF SITE RESPONSE AGENCIES
- ✓ FUTURE MEETINGS WITH OFF SITE RESPONSE AGENCIES TO COORDINATE EMERGENCY PROCEDURES

ON SITE EMERGENCY RESPONSE CAPABILITIES

- ✓ EMERGENCY RESPONSE ORGANIZATION
  - EMERGENCY MANAGEMENT TEAM
  - EMERGENCY RESPONSE TEAM
- ✓ ON SITE EQUIPMENT
  - SPILL CONTROL EQUIPMENT
  - PERSONAL PROTECTION EQUIPMENT
  - RECOVERY AND OVERPACK DRUMS
  - MEDICAL EMERGENCY RESPONSE EQUIPMENT
  - MOBILE EMERGENCY RESPONSE TRAILER
  - ES&H MONITORING EQUIPMENT
  - RADIATION DETECTION EQUIPMENT
  - ON SITE METEOROLOGICAL STATION

H3003-3/93

Engineering Controls for Radon During Raffinate Remediation

Donald J. Carpenter
Applied Science Manager

Morrison Knudsen Environmental Services
Boise, Idaho

Radon Can Be Controlled By A Number Of Methods

- Radon gas can be physically retained

  CSS product

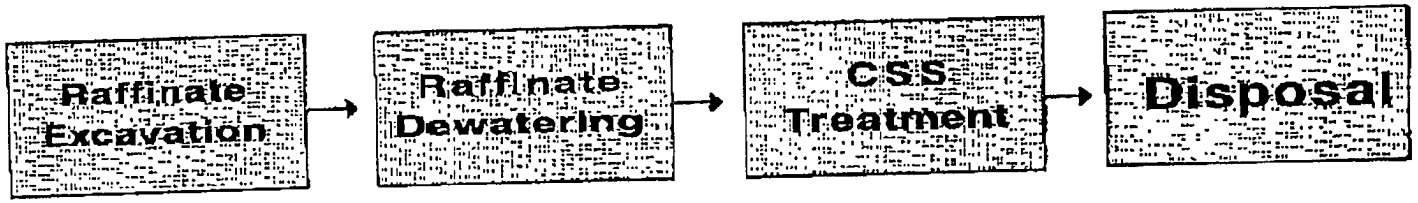
  Physical barriers
  - Disposal cell (radon barrier)
  - Geomembranes (HDPE, CSPE)
  - Sealed pipes and tanks
  - Water

- Released radon gas can be collected and treated by carbon adsorption

- Radon control methods will utilize all of these methods

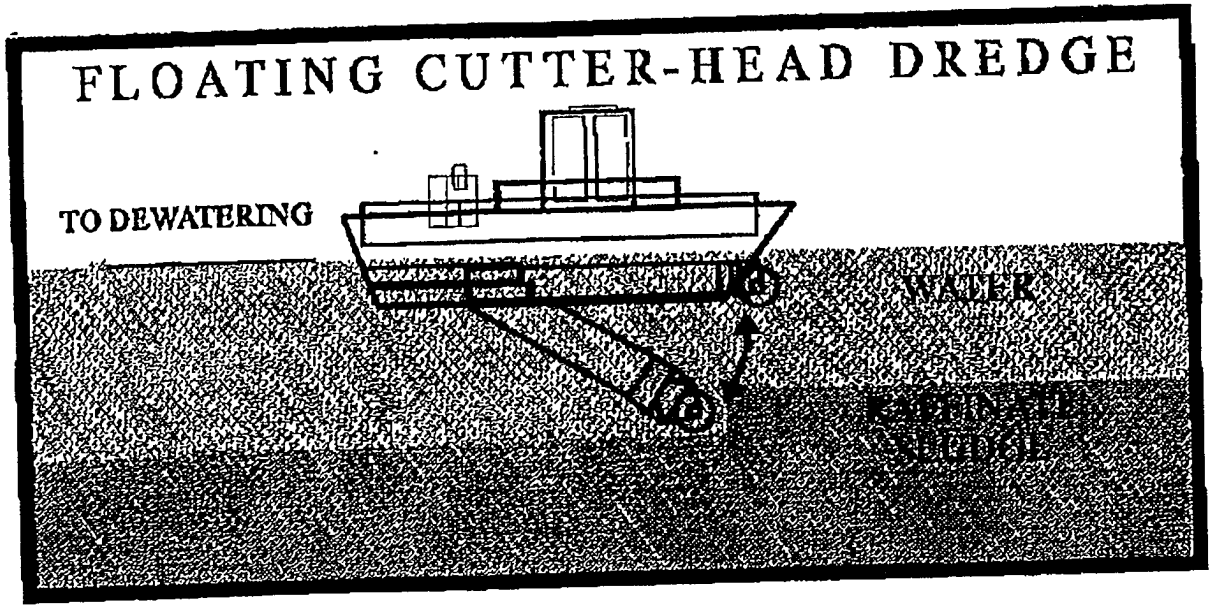
Radon-1

What Are The General Activities Associated With Raffinate Remediation?



- Comprehensive radon control is incorporated into each remedial component.
- At every point in the treatment train, radon is either confined or collected and treated.

The Conceptual Design Is Based on a Sub-Aqueous Excavation Method for Raffinate Sludge



- Overlying water minimizes radon and particulate emissions
- Pumped raffinate, while confined in pipe, obviates the need for radon control
- Extraneous water is added to raffinate sludge

MORRISON KNUDSEN CORPORATION

Radon Collection And Treatment Systems Are Designed Into The Dewatering Facility

- Trommel system
- Storage tank
- Flocculent mixer

Radon Collection And Treatment Systems Are Designed Into The CSS Facility

- Storage tank system
- First stage of CSS mixing (high shear mixer)

The Disposal Cell Is Specifically Designed To Attenuate Radon Emissions

- Radon Barrier - designed to attenuate measured radon emissions to applicable standards

The Pilot Scale Test Will Provide A Comprehensive Analysis Of Radon Emission And The Effectiveness Of Control Systems

- Provides data on the interrelationships of activities on radon emissions
- Allows optimization of the remedial system with respect to radon mitigation
- Allows assessment of contingency remedies

Numerous Contingency Remedies Are Available For Possible Use

- Raffinate Dredging
  - Increase water depth or use a blanketing agent on the water surface
  - Modify cutter head operation
  - Utilize a suction pump excavation system
  - Develop a radon collection and treatment system to fit over the floating barge
- Raffinate Dewatering
  - Optimize radon collection and treatment system(s)
  - Enhance radon emission at a specific point to facilitate control

Numerous Contingency Remedies Are Available For Possible Use (Continued)

- CSS System
  - Optimize radon collection and treatment system(s)
  - Enhance radon emission at a specific point to facilitate control
- Disposal Cell
  - Develop a more impermeable CSS product
  - Utilize a surface sealing agent or a surface foam
  - Cover with a radon collection or an activated carbon blanket
  - Utilize activated carbon in CSS product

Radon-6a