COPY

# HAZARDOUS MATERIALS INCIDENT INITIAL RESPONSE GUIDELINES

for

## MADISON KIPP CORPORATION

201 Waubesa Street
Madison, Wisconsin

Facility ID 003893-0

Last Updated: August 2011

This Guidance meets requirements for
EPCRA Off-Site Planning

# OFF-SITE PLAN
# for
# MADISON KIPP CORPORATION

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# OFF-SITE PLAN FOR: MADISON KIPP CORPORATION

## I. FACILITY IDENTIFICATION

Madison Kipp Corporation
201 Waubesa Street (PO BOX 8043)
Madison, WI 53708-8043
Phone: (608) 244-3511
Facility ID#: 003893-0

## II. FACILITY EMERGENCY COORDINATORS

| | PRIMARY | ALTERNATE |
|---|---|---|
| NAME: | Kim Eggers | Mark Meunier |
| TITLE: | Occup. Safety/Env. Manager | VP – Human Resources |
| WORK PHONE: | 242 - 5207 | 242-5270 |
| CELL PHONE: | 220-6980 | 770-9401 |

## III. EXTREMELY HAZARDOUS CHEMICALS ON SITE:

### EXTREMELY HAZARDOUS CHEMICALS:

| CAS # | CHEMICAL NAME / TRADE NAME | MAX AMOUNT | VUL. ZONE |
|---|---|---|---|
| 7782-50-5 | Chlorine | 1,500 pounds | 3.1 miles |

### OTHER CHEMICALS ON SITE:

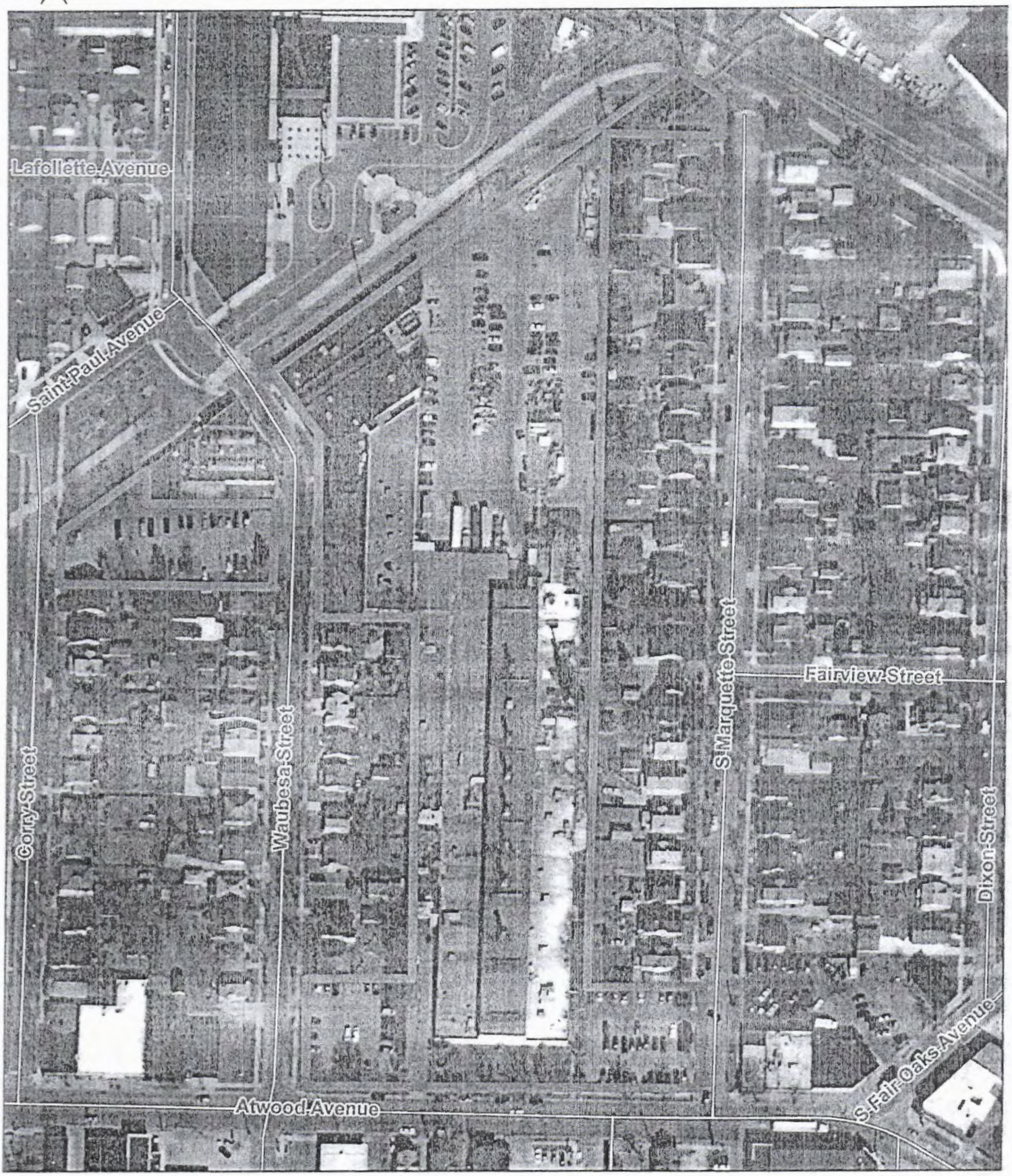
| CAS # | CHEMICAL NAME / TRADE NAME | MAX AMOUNT | VUL. ZONE |
|---|---|---|---|
| 74-98-6 | Propane | 2,000 gallons | DOT Guidebook* |
| 1310-73-2 | Sodium Hydroxide (50% solution) | 2,900 gallons | DOT Guidebook* |
| 7727-37-9 | Nitrogen (Cryogenic liquid) | 35,800 gallons | DOT Guidebook* |
| 7429-90-5 | Molten Aluminum | 255,000 pounds | |
| | Lubricast 902-LPC | 600 gallons | |
| 68476-30-2 | Fuel Oil #2 | 4,275 gallons | DOT Guidebook* |

* **DOT Guidebook** is primarily designed for use at transportation incidents. However, there may be value in its application during initial actions at fixed facilities.

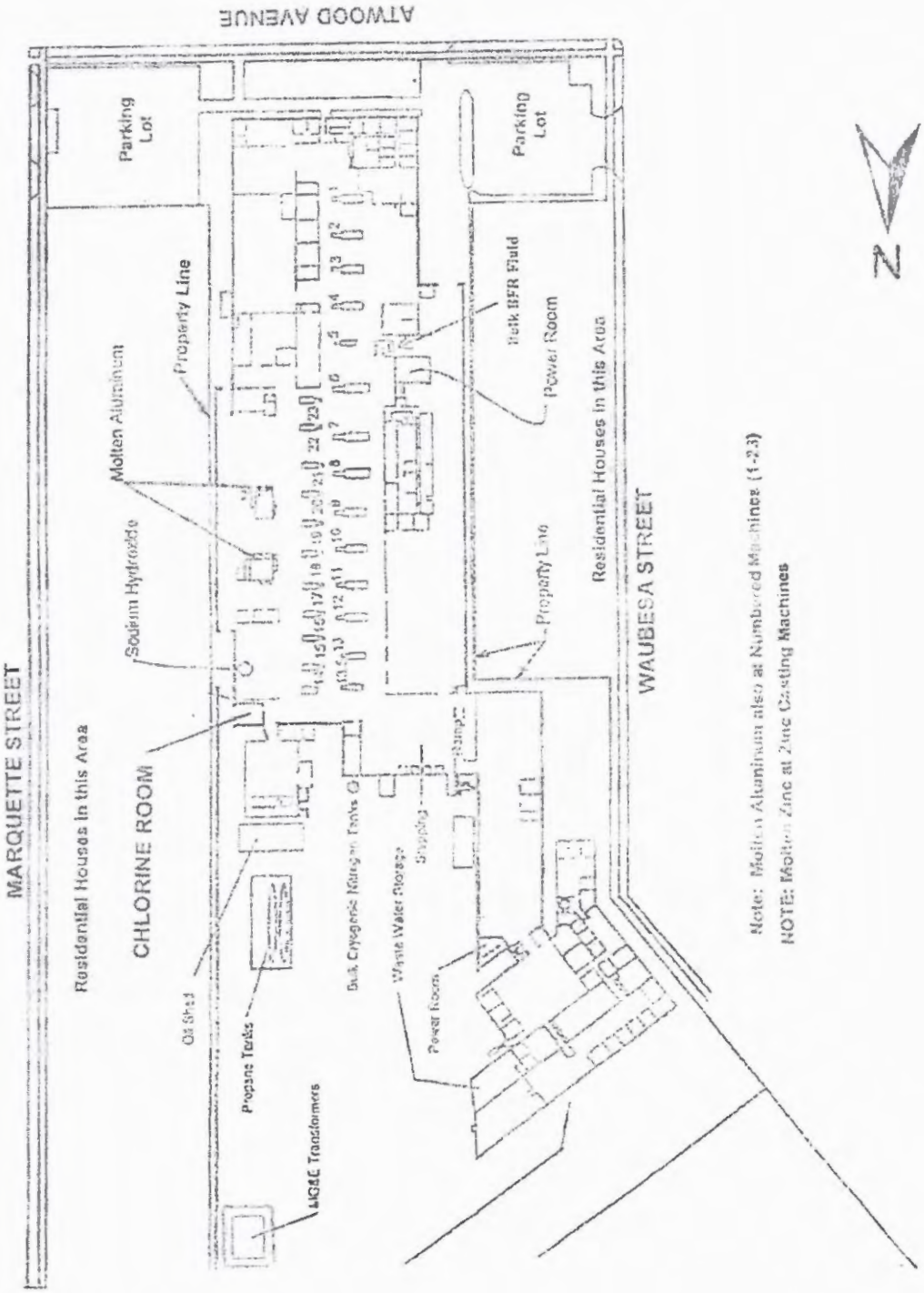
## IV. PRIMARY EMERGENCY RESPONDERS

| | |
|---|---|
| Madison Fire Department | 9-1-1 |
| Madison Police Department | 9-1-1 |

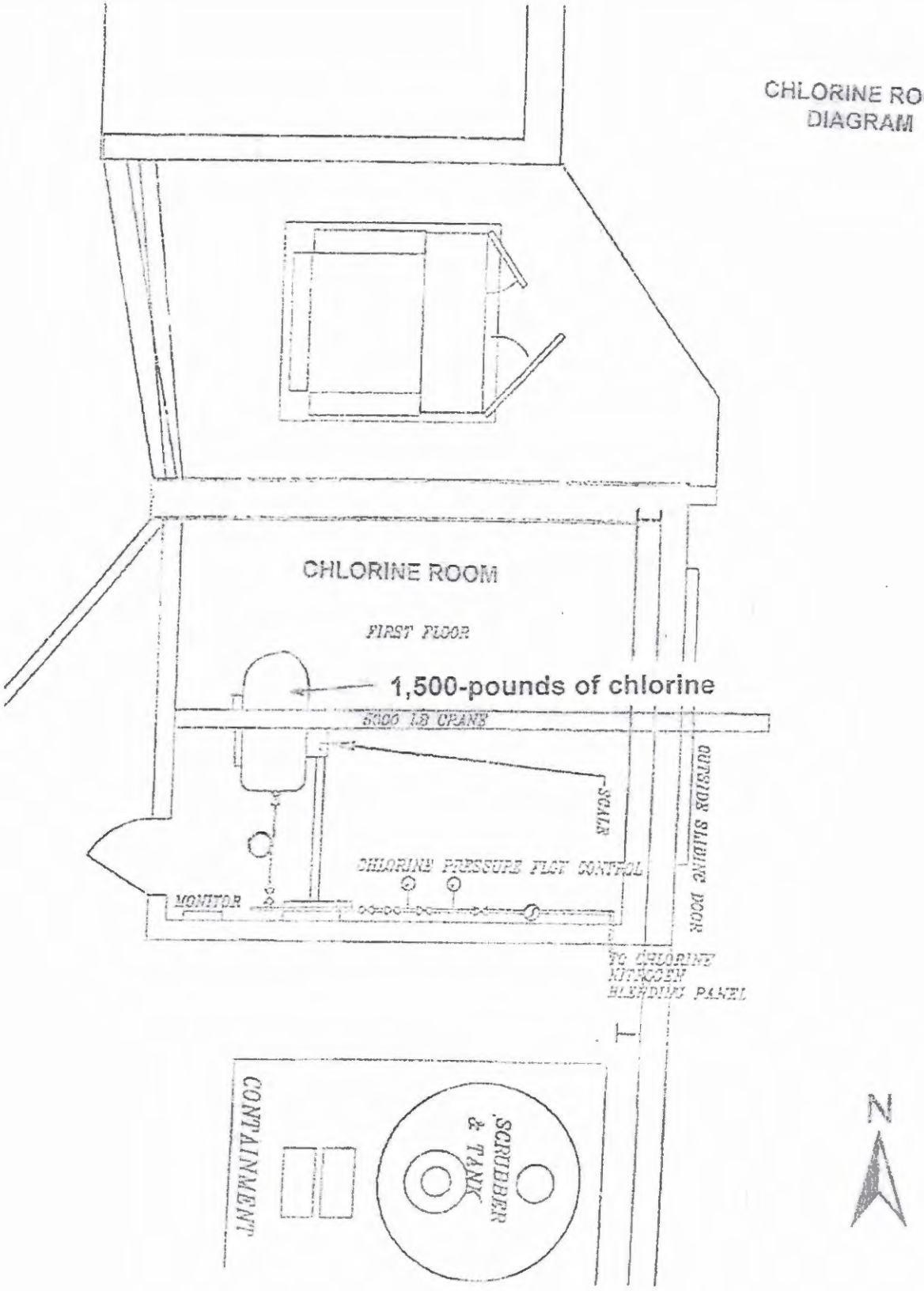
# Madison Kipp Location Map



# MADISON KIPP CORPORATION
## SITE DIAGRAM



CHLORINE ROOM
DIAGRAM



## V. SUPPORT AVAILABLE AT/FROM FACILITY

Spill Containment/Confinement:

Chlorine Kit "B"
2 – Self-contained breathing apparatus (SCBA)

Neutralization:

2,500 gallons of Sodium Hydroxide "Scrubber"

OUTSIDE RESOURCES AVAILABLE (Must be requested by Fire Incident Commander)

Hazardous Materials Response Team

| | |
|---|---|
| Level A - Regional Hazardous Materials Response Team | (800) 943-0003 |
| Madison Hazardous Incident Team | 9-1-1 |
| Response Time: | 30 minutes |
| Level B - Madison Hazardous Incident Team | 9-1-1 |

## VI. GENERAL INFORMATION/ASSUMPTIONS

The vulnerability zones set forth in this Plan were determined using the ALOHA Plume Dispersion Model. The zones are based on a credible worst-case scenario and identify the potential area for impact should an air-borne release of a single EHS occur.

The vulnerability zones are NOT intended to be used as a guide for population protection in fire-related incidents. Fire incidents were considered in the development of this plan and the plan provides basic information about the facility for first responders to employ. However, in an actual fire situation at this facility, the Incident Commander is strongly recommended to reference the fire department's own individual agency pre-emergency plans and standard operating procedures as well as the County's Emergency Operations Plan - Annex K: Fire and Rescue, as they may relate to this facility when making decisions at an incident involving fire.

Further, fire departments that would respond to an incident at this facility are strongly encouraged to meet with facility representatives to determine ways to minimize an event at the facility and to determine what additional information and factors should be taken into consideration in the event of a fire should one occur.

The actual response to an incident shall be determined by the field incident commander and the affected area may vary from the planning vulnerability zone identified in the Plan. Depending on wind speed and direction, the amount of material released and other pertinent factors, the ACTUAL vulnerability zone may be smaller, and in some instances larger, than the credible worst-case vulnerability zone identified herein. The vulnerability zones determined in the Plan are for general PLANNING PURPOSES.

## VII. HAZARD ANALYSIS for Madison Kipp Corporation

Facility Description

Die-casting plant which manufactures automotive parts, agricultural parts, and computer electronics out of aluminum. Plant operates 24-hours a day and employs about 400 people.

Location

Near east side of Madison, about 1/4 mile north of Lake Monona, at the intersection of Atwood Avenue and Waubesa Street. Facility is bounded on all sides by residential neighborhood with occasional commercial buildings.

Hazardous Materials Storage Information

| | |
|---|---|
| Chlorine: | Up to 1,500 pounds in a one ton-container can be found in the chlorine room at the northeast end of the plant. (The ton-containers used by Madison-Kipp are "short-filled" by the supplier and delivered with 1,500 pounds of chlorine, not the standard 2000 pounds of a full container).<br><br>Piping for this chlorine system runs from the chlorine room up to the ceiling, along the ceiling to the aluminum furnace, and down to the chlorine-nitrogen panel. This piping is also encased within PVC piping. Chlorine is then piped from this panel to the aluminum furnace under low-pressure. This system is designed to use 720 lbs. of chlorine per day.<br><br>The chlorine room has a 4-hour fire rating, is diked, and has a scrubber system which is automatically activated when the chlorine concentration within the room reaches 3 ppm. The scrubber is capable of neutralizing the entire contents of a ton container. An alarm and exterior light warns of the activation of the system. |
| Propane: | (2) 1,000 gallon tanks located outside just north of the oil shed. |
| Sodium Hydroxide: | 2,500 gal. of 26% solution is contained in the scrubber south of the chlorine room. The scrubber is diked to contain the entire contents of the scrubber. |

Hazardous Materials Storage Information (continued)

Combustible Oil: (1) 275-gallon fuel oil tank and (1) 4,000-gallon fuel oil bulk tank in the north parking lot.

Molten Aluminum: 255,000 pounds in two melting furnaces located at east side of plant, and in 20 die-cast holding furnaces.

Lubricast 902-LPC: Aluminum die cast machines use Lubricast 902-LPC (water Glycol) as a fire retardant hydraulic fluid. The largest container is a bulk 25,000-gallon holding container.

## Transportation Routes

Madison Kipp receives its supply of chlorine from Hydrite Chemical's facility located in Oshkosh (WI) and no longer from the Hydrite facility located in Cottage Grove (WI). It receives the chlorine supply in one-ton containers but is "short-filled" to 1,500-pounds and not the full 2,000-pound normal supply. Use of chlorine at the Madison Kipp facility has been reduced thereby shipments are made on as needed basis.

The likely transportation route would be from Hydrite's Oshkosh facility entering Dane County via US Highway 151 north of Sun Prairie to Highway 30 west, exit at North Fair Oaks Avenue south to Atwood Avenue and to the facility. Normal transportation/truck routes are used as much as possible.

## Greatest Potential for Release

It is determined that the greatest potential for a release from the chlorine system would be during a hook-up of a new ton container due to human error, causing the lead washer not to seal properly, producing a slow leak. The scrubber system would effectively neutralize any chlorine released in this situation.

## Worst Case Scenario

Due to the capability of the scrubber system, it has been determined that a release within the chlorine room would have little or no effect on the surrounding community. For this reason, it is determined that a worst-case scenario would involve chlorine being released directly to the outside of the facility during transport.

## VULNERABILITY ZONE AND NUMBER AFFECTED

The prediction of the off-site consequences depends greatly on the toxic endpoint or level of concern used in the modeling calculations. The toxic endpoint is the concentration in air below which the containment is not considered as an immediate threat to public safety.

The distance to the endpoint or vulnerability zone is the distance from the point of release that the chlorine vapor cloud is predicted to travel before dissipating to the point where serious injuries from short term exposures will no longer occur. Many factors are considered when predicting this distance. These include the amount of chemical released, chemical storage conditions, wind speed, temperature, time of day, cloud cover, and atmospheric stability. The ALOHA model was used in this plan for performing these calculations. A summary of the calculations is included as an attachment to this plan.

For planning purposes, the toxic endpoint used in the vulnerability zone calculations is 1 ppm or 1/10 of the IDLH (Immediately Dangerous to Life and Health) of chlorine in air. EPA in the Technical Guidance suggests this level for Hazard Analysis as a conservative figure, which will take into account the effects of the contaminant on persons in the population with respiratory and other health ailments. The IDLH is defined by the National Institute for Occupational Safety and Health (NIOSH) as a condition that "poses a threat of exposure to airborne contaminants when that exposure is likely to cause death or immediate or delayed permanent adverse health effects or prevent escape from such an environment." The IDLH for chlorine is 10 ppm.

For population protection purposes, an additional end point is also considered as an alternate scenario. This is defined by the American Industrial Hygiene Association (AIHA) Emergency Response Planning Guidelines (ERPG-2) as "the maximum airborne concentration below which it is believed that nearly all individuals could be exposed for up to one hour without experiencing or developing irreversible or other serious health effects or symptoms which could impair an individual's ability to take protective action." The ERPG-2 level for chlorine is 3 ppm.

### Vulnerability Zone:

| | |
|---|---|
| Chlorine release: | 3.1 miles at 1 ppm (1/10 IDLH)<br>1.9 miles at 3 ppm (ERPG -2) |

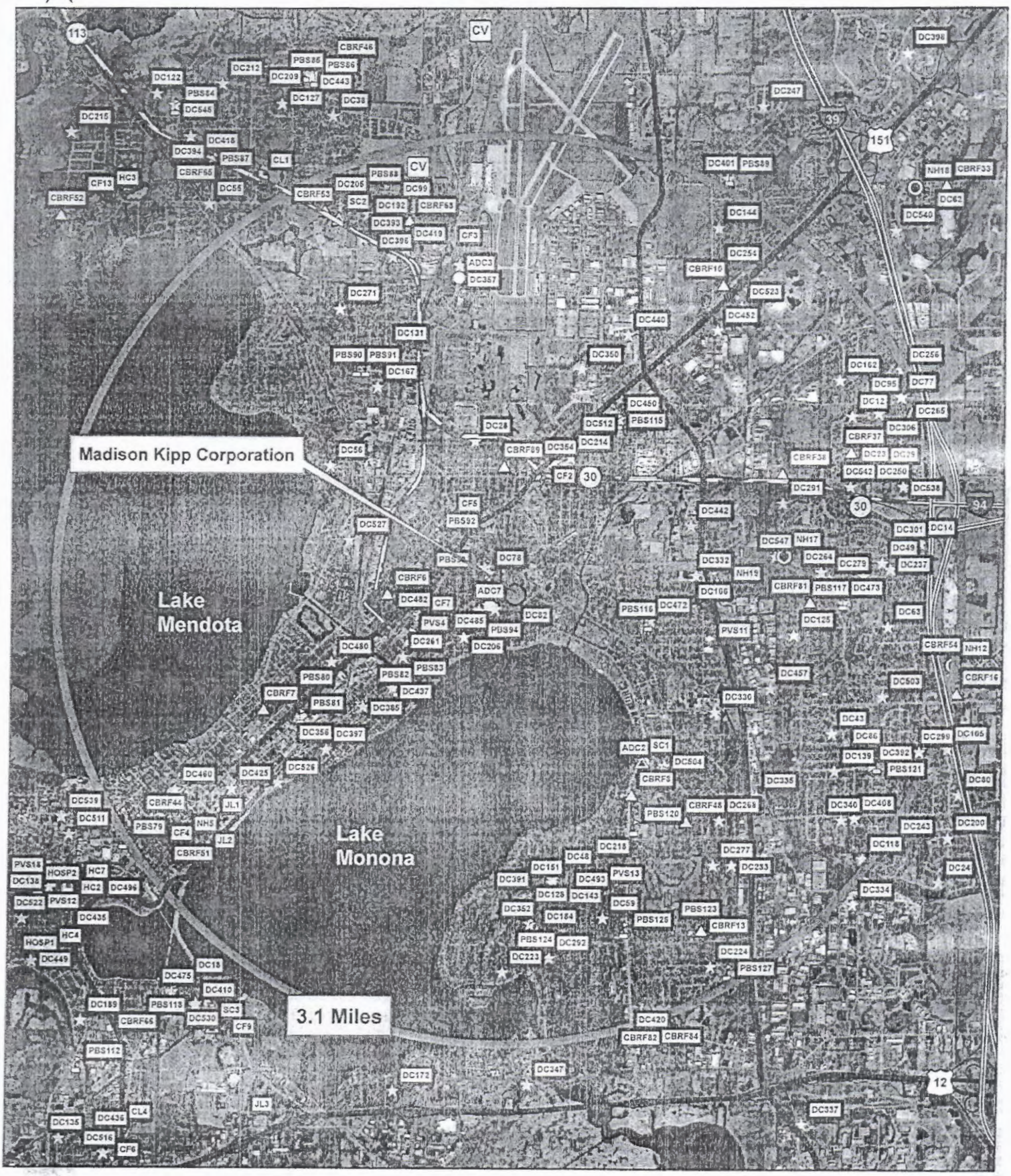
### Approximate Population:

| | | |
|---|---|---|
| Vulnerability Zone: | 3.1 miles (1/10 IDLH) | 1.9 miles (ERPG –2) |
| Number Affected: | 15,000 | 3,700 |

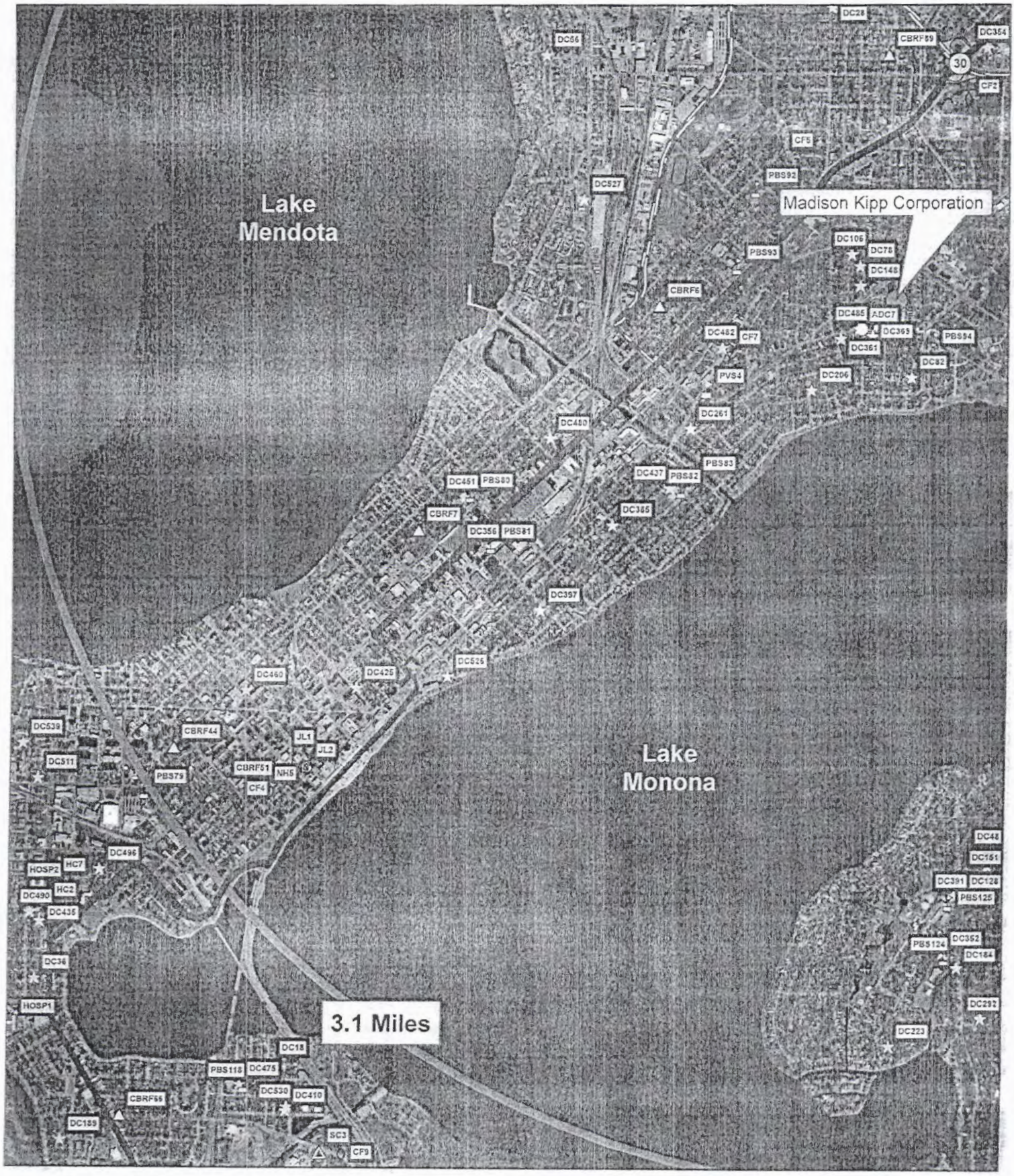
According to the ALOHA Model plume calculations for a chlorine release at this facility, in the worst case scenario, dangerous or deadly levels of chlorine contamination may reach a distance of between .1 and .25 miles down wind of the source within a matter of minutes following the initial release. In such an instance, immediate and effective public warning will be imperative. Population protection measures should be one of the first considerations of Incident Command when arriving at the scene of a catastrophic chlorine release at this facility. This may include diverting traffic from adjacent roads as well as advising neighboring residents to shelter-in-place.

| INHALATION EFFECTS OF CHLORINE ON HUMANS | |
|---|---|
| Chlorine Concentration in Air (PPM) | Symptoms |
| 1.0 | Permissible Exposure Level – STEL (15 minute TWA). |
| >1.0 | Detectable odor threshold. |
| 3 - 5 | Slight irritation of the nose and upper respiratory tract. |
| 5 -8 | Irritation of the respiratory tract and eyes. |
| 10 | **Immediately Dangerous to Life and Health (IDLH).** No permanent affects if the exposure is less than 30 minutes. |
| 15 -20 | Immediate severe irritation of the respiratory tract, intense coughing and choking. |
| 30 | Shortness of breath, chest-pain, possibly nausea and vomiting. |
| 40 - 60 | Development of chemical bronchitis and fluid in the lungs, which may occur several hours after exposure; chemical pneumonia may occur several days later. |
| Prolonged exposure over 50 PPM | Unconsciousness and death. |

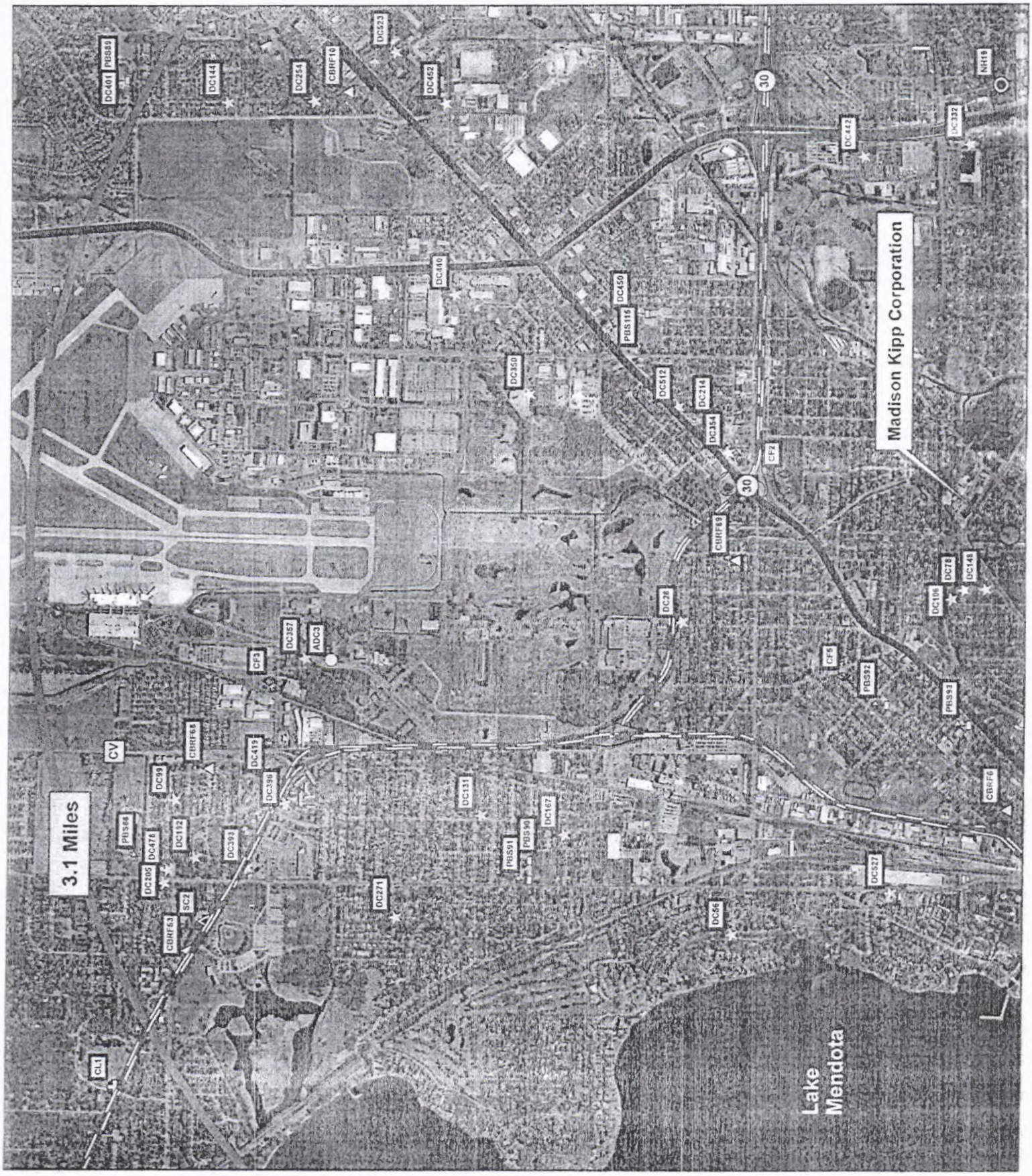
# Vulnerability Zone Map



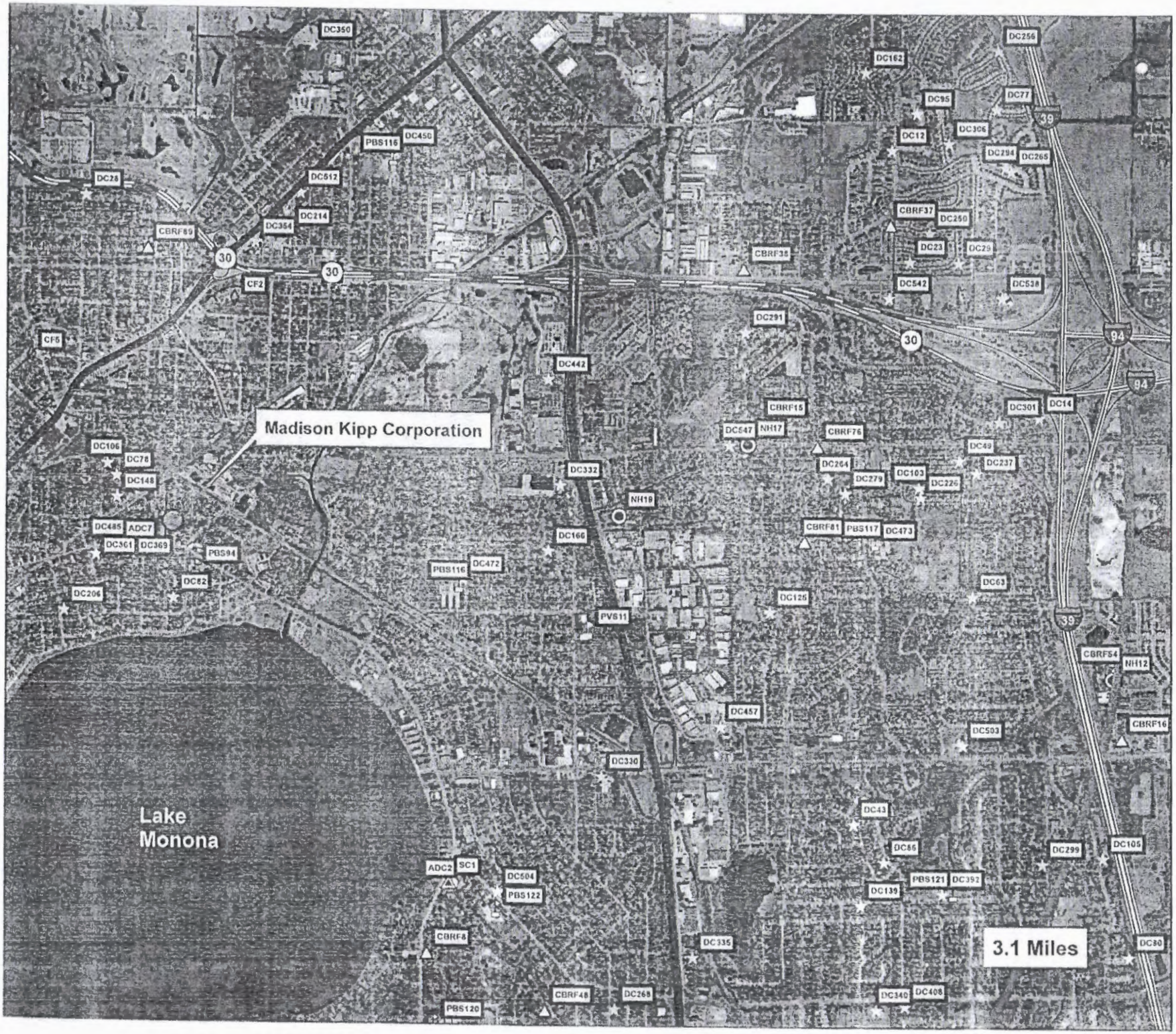
# Vulnerability Zone Map - Madison (WI) Isthmus Area



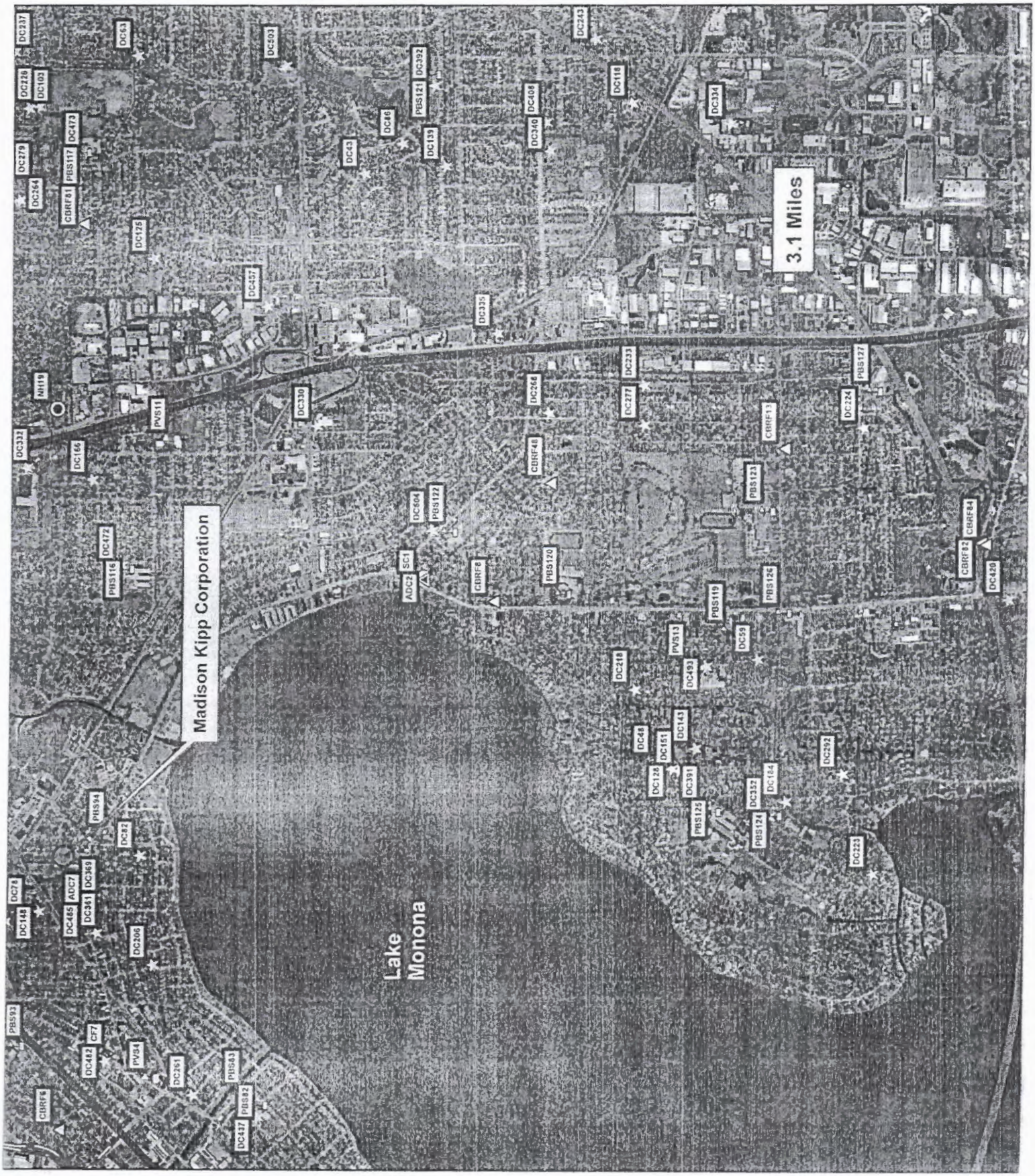
# Vulnerability Zone Map - North of Facility



# Vulnerability Zone Map - East of Facility



# Vulnerability Zone Map - Southeast of Facility



# Transportation Route Map

## VIII. Special Facilities Affected

| Facility ID | Facility Name | Address | City | Cap | Hours | Days | Months |
|---|---|---|---|---|---|---|---|
| ADC2 | E MADISON MONONA COALITION OF AGING | 4142 MONONA DR | Madison | 14 | ** | ** | ** |
| ADC3 | EAST ADULT DAY CENTER | 2802 INTERNATIONAL LA | Madison | 78 | ** | ** | ** |
| ADC7 | ST MARYS ADULT DAY HEALTH CENTER | 2440 ATWOOD AVE | Madison | 30 | ** | ** | ** |
| CBRF6 | ARC DAYTON ST | 2009 E DAYTON ST | MADISON | 12 | ** | ** | ** |
| CBRF7 | ARC HOUSE | 202 N PATERSON ST | MADISON | 15 | ** | ** | ** |
| CBRF8 | ARC MATERNAL & INFANT PROGRAM | 4202 MONONA DR | MADISON | 12 | ** | ** | ** |
| CBRF10 | ATTIC CORRECTIONAL TREATMENT CENTER | 4117 DWIGHT DR | MADISON | 19 | ** | ** | ** |
| CBRF13 | BRIGHTER LIFE LIVING | 901 PFLAUM RD | MADISON | 8 | ** | ** | ** |
| CBRF15 | CHAMOMILE ASSISTED LIVING LTD | 22 MILO LANE | MADISON | 17 | ** | ** | ** |
| CBRF37 | HARBOR SUITES | 734 MESTA LA | MADISON | 17 | ** | ** | ** |
| CBRF38 | HARMONY OF MADISON | 705 ZIEGLER RD | MADISON | 47 | ** | ** | ** |
| CBRF44 | HOPE HAVEN COLVIN MANOR | 425 W JOHNSON ST | MADISON | 40 | ** | ** | ** |
| CBRF48 | LSS DEAN AVENUE GROUP HOME | 500 E DEAN AVE | MADISON | 8 | ** | ** | ** |
| CBRF51 | MERITER TERRACES | 345 W MAIN ST | MADISON | 48 | ** | ** | ** |
| CBRF53 | NORTHPORT GROUP HOME | 1602 NORTHPORT DR | MADISON | 8 | ** | ** | ** |
| CBRF54 | OAK PARK PLACE-AUTUMN LANE | 702 JUPITER DR | MADISON | 36 | ** | ** | ** |
| CBRF68 | SCHWERT AODA TREATMENT CENTER | 3501 KIPLING DR | Madison | 15 | ** | ** | ** |
| CBRF76 | SWANTON HOUSE | 4702 MILWAUKEE ST | Madison | 8 | ** | ** | ** |
| CBRF81 | TELLURIAN UCAN ACEWOOD HOUSE | 221 ACEWOOD BLVD | Madison | 7 | ** | ** | ** |
| CBRF89 | WOMEN IN TRANSITION | 2842 MOLAND ST | Madison | 12 | ** | ** | ** |
| CF2 | Division Central Office | 3099 East Washington Ave | Madison | ** | ** | ** | ** |
| CF3 | Region 1 Office Jail Inspector | 2445 Darwin Rd, Suite 102 | Madison | ** | ** | ** | ** |
| CF4 | Unit 110 INTAKE | 411 W Main St | Madison | ** | ** | ** | ** |
| CF5 | Units 102 & 113 | 2565 E Johnson St | Madison | ** | ** | ** | ** |
| CF7 | Unit 112 | 2039 Winnebago St | Madison | ** | ** | ** | ** |
| DC14 | WADDLE IN FAMILY DAYCARE | 16 OBRIEN CT | Madison | 8 | 0630A0500P | MONFRI | JANDEC |
| DC12 | SHARON'S TOYBOX DAYCARE | 1012 N THOMPSON DR | Madison | 8 | 0600A0600P | MONFRI | JANDEC |
| DC23 | WARM HEARTS FAMILY DAY CARE | 5110 WINTERGREEN DR | Madison | 8 | 0700A0445P | MONFRI | JANDEC |
| DC28 | CHILD'S CASTLE DAYCARE | 1001 KEDZIE ST | Madison | 8 | 0700A0900P | MONFRI | JANDEC |
| DC29 | DARLENE'S FAMILY DAY CARE | 5149 WINTERGREEN DR | Madison | 8 | 0700A0500P | MONFRI | JANDEC |
| DC43 | LITTLE ONES FAMILY DAY CARE | 1110 TIMOTHY AVE | Madison | 8 | 0700A0530P | MONSUN | JANDEC |
| DC48 | SQUEALS OF JOY | 4808 MCKENNA RD | Monona | 8 | 0700A0545P | MONFRI | JANDEC |
| DC49 | COLLEEN'S CHILD CARE CENTER | 5134 STAGE HOUSE TRL | Madison | 8 | 0700A0500P | MONFRI | JANDEC |
| DC56 | BETTY PROSISE INFANT CARE CENTER | 126 LAKEWOOD BLVD | Madison | 4 | 0730A0430P | MONTHU | JANDEC |

| Facility ID | Facility Name | Address | City | Cap | Hours | Days | Months |
|---|---|---|---|---|---|---|---|
| DC59 | BABY LOVE CHILD CARE | 5202 SCHOFIELD AVE | Monona | 8 | 0700A0530P | MONFRI | JANDEC |
| DC63 | KINGDOM KIDZ | 5221 RETANA DR | Madison | 8 | 0730A0600P | MONSAT | JANDEC |
| DC77 | NANCY FERDYN FAMILY CHILD CARE | 1113 GLACIER HILL DR | Madison | 8 | 0700A0600P | MONFRI | JANDEC |
| DC78 | JACKIE'S HOUSE | 122 CORRY ST | Madison | 8 | 0700A0530P | MONFRI | JANDEC |
| DC82 | ELMSIDE CHILDREN'S SCHOOL | 525 ELMSIDE BLVD | Madison | 8 | 0830A0430P | MONFRI | SEPJUN |
| DC86 | KID AT HEART | 1218 WOODVALE DR | Madison | 8 | 0700A0515P | MONFRI | JANDEC |
| DC95 | UNITED FAMILY CHILDCARE | 5146 CRESCENT OAKS DR | Madison | 8 | 0600A0600P | MONSAT | JANDEC |
| DC99 | ACTIVITY PYRAMID | 1913 SHELLEY LN | Madison | 8 | 0600A0645P | SUNSAT | JANDEC |
| DC103 | BLESSINGS FROM ABOVE CHILDCARE | 5013 HACKNEY WAY | Madison | 8 | 0700A0500P | MONFRI | JANDEC |
| DC106 | PEGGY'S HOUSE | 103 TALMADGE ST | Madison | 8 | 0700A0530P | MONFRI | JANDEC |
| DC118 | MAIER FAMILY CHILD CARE | 5017 STONEHAVEN DR | Madison | 8 | 0700A0500P | MONFRI | JANDEC |
| DC125 | JAN'S FAMILY DAY CARE | 506 VERNON AVE | Madison | 8 | 0600A0600P | MONFRI | JANDEC |
| DC128 | MCNAMARA'S FAMILY DAY CARE | 4901 MCKENNA RD | Monona | 6 | 0645A0530P | MONFRI | JANDEC |
| DC131 | HEATH HOUSE DAY CARE | 1901 HEATH AVE | Madison | 6 | 0700A0500P | MONFRI | JANDEC |
| DC139 | DISCOVER AND GROW FAMILY DAYCARE | 4817 ACADEMY DR | Madison | 8 | 0700A0500P | MONFRI | JANDEC |
| DC143 | NANCY'S DAY CARE | 611 GREENWAY RD | Monona | 8 | 0600A0500P | MONFRI | JANDEC |
| DC144 | SUE'S HEART 2 HEART | 2410 GREENRIDGE DR | Madison | 8 | 0600A0600P | SUNSAT | JANDEC |
| DC148 | CIRCLE FAMILY CHILD CARE | 154 CORRY ST | Madison | 8 | 0800A0430P | MONFRI | JANDEC |
| DC151 | ONCE UPON A CHILD | 4905 MCKENNA RD | Monona | 8 | 0700A0530P | MONFRI | JANDEC |
| DC162 | KATHY'S PLAYCARE | 1214 ARTISAN DR | Madison | 8 | 0600A0600P | MONFRI | JANDEC |
| DC166 | STARR BRITE DAY CARE | 129 SILVER RD | Madison | 8 | 0700A0500P | MONFRI | JANDEC |
| DC167 | WE ARE THE CHILDREN | 1818 BOYD AVE | Madison | 8 | 0630A0630P | MONFRI | JANDEC |
| DC184 | CUDDLETOWN CHILD CARE | 5305 MAYWOOD RD | Monona | 8 | 0730A0530P | MONFRI | JANDEC |
| DC192 | DONNA'S DAY CARE | 3610 SPENSER LN | Madison | 8 | 0700A0530P | MONFRI | JANDEC |
| DC205 | CATHY'S CHILD CARE | 3706 N SHERMAN AVE | Madison | 8 | 0730A0700P | MONSAT | JANDEC |
| DC206 | BRIDGES CHILD CARE | 525 DUNNING ST | Madison | 8 | 0600A0600P | MONSAT | JANDEC |
| DC214 | BOELTER'S DAY CARE | 710 PINECREST DR | Madison | 8 | 0715A0515P | MONFRI | JANDEC |
| DC218 | SHORE ACRES DAY CARE INC | 4702 SHORE ACRES RD | Monona | 8 | 0600A0600P | MONFRI | JANDEC |
| DC223 | HOME CARE CENTER | 917 BIRCH HAVEN CIR | Monona | 8 | 0700A0600P | MONFRI | JANDEC |
| DC224 | KAREN'S HOME CARE | 1001 TOMPKINS DR | Madison | 8 | 0700A0530P | MONFRI | JANDEC |
| DC226 | KIDS-N-STUFF | 5034 SUDBURY WAY | Madison | 8 | 0645A0430P | MONFRI | JANDEC |
| DC233 | A+ EVENING CARE | 4921 CAMDEN RD | Madison | 8 | 1100A1100P | MONFRI | JANDEC |
| DC237 | WADDLE IN DAYCARE | 10 CAVENDISH CT | Madison | 8 | 0630A0500P | MONFRI | JANDEC |
| DC250 | DD'S DAYCARE | 5125 PRAIRIE ROSE RD | Madison | 8 | 0730A0530P | MONFRI | JANDEC |
| DC254 | BARBIE'S HOME CHILD CARE CENTER | 2106 SUNNYSIDE CRESCENT | Madison | 8 | 0715A0700P | MONFRI | JANDEC |

| Facility ID | Facility Name | Address | City | Cap | Hours | Days | Months |
|---|---|---|---|---|---|---|---|
| DC256 | GLACIER RIDGE DAYCARE | 1302 GLACIER HILL DR | Madison | 8 | 0700A0600P | MONSAT | JANDEC |
| DC261 | CINDY AND PEGGY'S FAMILY CC | 301 CLEMONS AVE | Madison | 8 | 0700A0530P | MONFRI | JANDEC |
| DC264 | STAY N PLAY | 5 CHARLEEN LN | Madison | 8 | 0630A0500P | MONFRI | JANDEC |
| DC265 | BUTTERFLIES HOME DAY CARE | 5333 GOLDEN LEAF TRL | Madison | 8 | 0730A0530P | MONFRI | JANNOV |
| DC268 | STACYS QUALITY DAYCARE | 4705 TURNER AVE | Madison | 8 | 0600A0600P | MONFRI | JANDEC |
| DC271 | LITTLE BUNNIES | 2213 CALYPSO RD | Madison | 8 | 0730A0530P | MONFRI | JANDEC |
| DC277 | RUTHIE'S RASCALS | 4924 TURNER AVE | Madison | 8 | 0600A0500P | MONFRI | JANDEC |
| DC279 | SUNNY BUNNY CHRISTIAN HOME CC | 105 WALKER DR | Madison | 8 | 0630A0530P | MONFRI | JANDEC |
| DC291 | A BUNNY'S LIFE CHILD CARE CENTER | 13 ESTHER CT | Madison | 6 | 0600A1200A | MONSAT | JANDEC |
| DC292 | DEBBIE'S LITTLE DARLINGS | 702 KELLY PL | Monona | 8 | 0800A0430P | MONFRI | JANDEC |
| DC294 | CASSANDRA'S BADGER BABIES | 5325 GOLDEN LEAF TRL | Madison | 8 | 0700A0600P | MONSAT | JANDEC |
| DC299 | DAWNIE'S HOUSE FAMILY DAY CARE | 1306 DROSTER RD | Madison | 8 | 0730A0530P | MONFRI | JANDEC |
| DC301 | CYNDIE'S LEARNING THRU PLAY | 5302 TRAFALGER PL | Madison | 8 | 0630A0900P | MONFRI | JANDEC |
| DC306 | GOOD MOMMY CHILD CARE | 1017 BULTMAN RD | Madison | 8 | 0500A1000P | MONFRI | JANDEC |
| DC330 | YMCA OF DANE CO PRESCHOOL EAST | 711 COTTAGE GROVE RD | Madison | 33 | 0830A0345P | MONFRI | JANDEC |
| DC332 | DCPC EAST HEAD START & CC | 30 DEMPSEY RD | Madison | 89 | 0600A0600P | MONFRI | JANDEC |
| DC335 | RAINBOW'S END CHRIST LRNG CTR | 1602 BLOSSOM LN | Madison | 50 | 0630A0530P | MONFRI | JANDEC |
| DC340 | CAMPUS FOR KIDS LEARNING CENTER | 4905 E BUCKEYE RD | Madison | 300 | 0600A0600P | MONFRI | JANDEC |
| DC350 | DCPC PRESCHOOL ENRICHMENT PROGRAM | 8 STRAUBEL CT | Madison | 20 | 0600A0530P | MONFRI | JANDEC |
| DC352 | YMCA OF DANE CO MAYWOOD | 902 NICHOLS RD | Monona | 45 | 0700A0545P | MONFRI | JANDEC |
| DC354 | CLAUDIS KIDS DAY CARE | 3131 E WASHINGTON AVE | Madison | 68 | 0630A1200A | MONFRI | JANDEC |
| DC356 | DCPC WEE START | 15 S BREARLY ST | Madison | 30 | 0600A 600P | MONFRI | JANDEC |
| DC357 | SOUTHERN REGIONAL OFFICE | 2917 INTERNATIONAL LN STE 110 | Madison | 8 | 0745A0430P | MONFRI | JANDEC |
| DC361 | ATWOOD COMMUNITY PRESCHOOL | 2425 ATWOOD AVE | Madison | 26 | 0700A0530P | MONFRI | JANDEC |
| DC369 | ATWOOD SCHOOL AGE PROGRAM | 2717 ATWOOD AVE | Madison | 50 | 0700A0600P | MONFRI | JANDEC |
| DC385 | CDI NATURE OF KIDS LEARNING CENTER | 412 S BALDWIN | Madison | 45 | 0700A0530P | MONFRI | JANDEC |
| DC391 | YMCA OF DANE CO WINNEQUAH | 800 GREENWAY RD | Monona | 35 | 0700A0545P | MONFRI | JUNAUG |
| DC392 | YMCA OF DANE CO ELVEHJEM | 5106 ACADEMY DR | Madison | 55 | 0700A0545P | MONFRI | JANDEC |
| DC393 | DCPC NORTHPORT HEAD START | 1740 NORTHPORT DR | Madison | 20 | 0800A0500P | MONFRI | JANDEC |
| DC396 | DCPC PACKERS HEAD START | 1927 NORTHPORT DR | Madison | 20 | 0800A0400P | MONFRI | JANDEC |
| DC397 | WIL MAR NEIGHBORHOOD CENTER | 953 JENIFER ST | Madison | 35 | 0700A0600P | MONFRI | JANDEC |
| DC408 | HARMONY HOUSE | 4937 E BUCKEYE RD | Madison | 14 | 0730A0530P | MONFRI | JANDEC |
| DC419 | SUNBURST PRESCHOOL | 2017 LONDONDERRY DR | Madison | 130 | 0600A0600P | MONFRI | JANDEC |
| DC425 | CREATIVE LEARNING PRESCHOOL AND CCC | 105 S BUTLER ST | Madison | 150 | 0630A0600P | MONFRI | JANDEC |
| DC437 | RED CABOOSE SCHOOL AGE MARQUETTE | 1501 JENIFER ST | Madison | 64 | 0715A0545P | MONFRI | JANDEC |

| Facility ID | Facility Name | Address | City | Cap | Hours | Days | Months |
|---|---|---|---|---|---|---|---|
| DC440 | MATC CHILD & FAMILY CENTER TRUAX | 3550 ANDERSON ST | Madison | 32 | 0630A0530P | MONFRI | JANDEC |
| DC442 | POOH BEAR CHILD CARE CORPORATE CTR | 290 CORPORATE DR | Madison | 163 | 0630A0600P | MONFRI | JANDEC |
| DC450 | AFTER SCHOOL HAWTHORNE | 3344 CONCORD AVE | Madison | 32 | 0700A0545P | MONFRI | SEPJUN |
| DC451 | RED CABOOSE SCHOOL AGE LAPHAM | 1045 E DAYTON ST | Madison | 80 | 0715A0545P | MONFRI | JANDEC |
| DC452 | DISCOVERY YEARS PRESCHOOL | 4002 LIEN RD | Madison | 20 | 0715A0500P | MONFRI | SEPMAY |
| DC457 | PLAY HAVE ATLAS LLC | 1 ATLAS CT | Madison | 120 | 0645A0600P | MONFRI | JANDEC |
| DC460 | MATC CHILD & FAMILY CENTER DOWNTOWN | 211 N CARROLL ST | Madison | 44 | 0630A0530P | MONFRI | JANDEC |
| DC472 | YMCA OF DANE CO SCHENK | 230 SCHENK ST | Madison | 55 | 0700A0545P | MONFRI | SEPJUN |
| DC473 | YMCA OF DANE CO KENNEDY | 221 MEADOWLARK DR | Madison | 55 | 0700A0545P | MONFRI | JANDEC |
| DC478 | LAKEVIEW COOPERATIVE PRESCHOOL | 3705 N SHERMAN AVE | Madison | 20 | 0800A1245P | MONFRI | SEPJUN |
| DC480 | TENNEY NURSERY & PARENT CENTER INC | 1321 E MIFFLIN ST | Madison | 52 | 0730A0530P | MONFRI | JANDEC |
| DC482 | BIG OAK CHILD CARE CENTER | 2030 WINNEBAGO ST | MADISON | 39 | 0700A0545P | MONFRI | JANDEC |
| DC485 | ST BERNARD CATHOLIC PRESCHOOL | 2438 ATWOOD AVE | MADISON | 46 | 0730A0400P | MONFRI | JANDEC |
| DC493 | IMMACULATE HEART OF MARY PRESCHOOL | 5001 SCHOFIELD ST | Monona | 20 | 0800A0300P | MONFRI | AUGJUN |
| DC503 | MESSIAH PRESCHOOL | 5202 COTTAGE GROVE RD | Madison | 18 | 0900A0300P | MONFRI | SEPMAY |
| DC504 | MONONA GROVE NURSERY SCHOOL | 4200 BUCKEYE RD | Madison | 38 | 0900A0300P | MONFRI | SEPMAY |
| DC512 | BETHESDA CHILD CARE | 3245 E WASHINGTON AVE | Madison | 95 | 0630A0530P | MONFRI | JANDEC |
| DC523 | PLAY HAVEN EAST TOWNE LLC | 4111 E TOWNE BLVD | Madison | 175 | 0630A0600P | MONFRI | JANDEC |
| DC526 | RED CABOOSE DAY CARE CENTER INC | 654 WILLIAMSON ST | MADISON | 60 | 0700A0600P | MONFRI | JANDEC |
| DC527 | THE RESPITE CENTER | 2120 FORDEM AVE | MADISON | 12 | 0800A0800P | SUNSAT | JANDEC |
| DC538 | KIDS DEPOT | 5301 COMMERCIAL AVE | MADISON | 55 | 0600A0600P | MONFRI | JANDEC |
| DC542 | CLAUDI'S KIDS DAYCARE | 4913 COMMERCIAL AVE | MADISON | 34 | 0630A1200A | MONFRI | JANDEC |
| DC547 | TOAD HILL CHILDREN'S HOUSE | 4418 MILWAUKEE ST | MADISON | 18 | 0700A0330P | MONFRI | JANDEC |
| JL1 | CITY COUNTY BLDG JAIL | 21 MARTIN LUTHER KING BLVD | MADISON | ** | ** | ** | ** |
| JL2 | PUBLIC SAFETY BUILDING | 115 W DOTY ST | MADISON | ** | ** | ** | ** |
| NH5 | MERITER HEALTH CENTER | 334 W DOTY ST | Madison | ** | ** | ** | ** |
| NH12 | OAK PARK NURSING & REHAB CENTER | 718 JUPITER DR | Madison | ** | ** | ** | ** |
| NH17 | KARMENTA CENTER | 4502 MILWAUKEE ST | Madison | ** | ** | ** | ** |
| NH19 | BELMONT NURSING & REHAB CENTER | 110 BELMONT RD | Madison | ** | ** | ** | ** |
| PVS4 | Operation Fresh Start Inc | 1925 Winnebago St | Madison | ** | ** | ** | ** |
| PVS11 | Saint Dennis Grade Sch | 409 Dempsey Rd | Madison | ** | ** | ** | ** |
| PVS13 | Immaculate Hrt of Mary Gr Sch | 4913 Schofield St | Monona | ** | ** | ** | ** |
| PBS80 | Lapham Elementary | 1045 E Dayton St | Madison | ** | ** | ** | ** |
| PBS81 | SAPAR Program High | 15 S Brearly St | Madison | ** | ** | ** | ** |
| PBS82 | Marquette Elementary | 1501 Jenifer St | Madison | ** | ** | ** | ** |

| Facility ID | Facility Name | Address | City | Cap | Hours | Days | Months |
|---|---|---|---|---|---|---|---|
| PBS83 | O'Keeffe Middle | 510 S Thornton Ave | Madison | ** | ** | ** | ** |
| PBS88 | Lake View Elementary | 1802 Tennyson Ln | Madison | ** | ** | ** | ** |
| PBS90 | Sherman Middle | 1610 Ruskin St | Madison | ** | ** | ** | ** |
| PBS91 | Shabazz-City High | 1601 N Sherman Ave | Madison | ** | ** | ** | ** |
| PBS92 | Emerson Elementary | 2421 E Johnson St | Madison | ** | ** | ** | ** |
| PBS93 | East High | 2222 E Washington Ave | Madison | ** | ** | ** | ** |
| PBS94 | Lowell Elementary | 401 Maple Ave | Madison | ** | ** | ** | ** |
| PBS115 | Hawthorne Elementary | 3344 Concord Ave | Madison | ** | ** | ** | ** |
| PBS116 | Whitehorse Middle | 218 Schenk St | Madison | ** | ** | ** | ** |
| PBS117 | Kennedy Elementary | 221 Meadowlark Dr | Madison | ** | ** | ** | ** |
| PBS119 | Monona Grove Alternative High | 5104 Gordon Avenue | Monona | ** | ** | ** | ** |
| PBS120 | Monona Grove High | 4400 Monona Dr | Monona | ** | ** | ** | ** |
| PBS121 | Elvehjem El | 5106 Academy Dr | Madison | ** | ** | ** | ** |
| PBS122 | Allis Elementary | 4201 Buckeye Rd | Madison | ** | ** | ** | ** |
| PBS123 | LaFollette High | 702 Pflaum Rd | Madison | ** | ** | ** | ** |
| PBS124 | Maywood Elementary | 902 Nichols Rd | Monona | ** | ** | ** | ** |
| PBS125 | Winnequah Middle | 800 Greenway Rd | Monona | ** | ** | ** | ** |
| PBS126 | Nichols Elementary | 100 Nichols Rd | Monona | ** | ** | ** | ** |
| PBS127 | Glendale Elementary | 1201 Tompkins Dr | Madison | ** | ** | ** | ** |
| SC1 | East Madison/Monona Coalition | 4142 Monona Dr. | Madison | ** | ** | ** | ** |
| SC2 | North/Eastside Senior Coalition | 1625 Northport Dr. #125 | Madison | ** | ** | ** | ** |

| ** = ** | |
|---|---|
| **Key To Above Codes** | |
| ADC | Adult Day Care |
| AFH | Adult Family Homes |
| ATF | Alternative Treatment Facilities |
| CL | Clinics |
| CF | Correctional Facilities |
| DC | Child Day Care |

| ** = ** | |
|---|---|
| **Key To Above Codes** | |
| HOSP | Hospitals |
| JL | Jails |
| NH | Nursing Homes |
| PVS | Private Schools |
| PBS | Public Schools |
| SC | Senior Centers |

## IX. POPULATION PROTECTION

### General:

Determination to shelter in place or evacuate will be made by the on-scene commander as appropriate.

The lead-time for a HAZMAT incident could be from 15- 40 minutes. As a result, this short time may not allow for a safe evacuation, especially when extremely toxic chemical fumes are involved. **An evacuation under these circumstances may expose the population to dangerous toxic chemicals and the decision may be made to shelter-in-place.**

**Shelter-in-Place**

Recommended Instructions:

1) Close and lock all windows and doors to the outside (windows often seal better when locked).

2) Turn off all building ventilation systems

3) Turn off all building heating systems

4) Turn off all air conditioners and switch inlets to the closed position. Seal any gaps around window type air conditioners with tape and plastic sheeting, wax paper, or aluminum foil.

5) Turn off all exhaust fans in kitchens, bathrooms, and other spaces.

6) Close all fireplace dampers.

7) Use tape and plastic food wrapping, wax paper, or aluminum wrap to cover and seal bathroom exhaust fan grilles, range vents, dryer vents, and other openings to the outside to the extent possible (including any obvious gaps around external windows and doors).

8) If an explosion is possible - close draperies, curtains, and shades over windows. Stay away from external windows to prevent potential injury from flying glass.

9) Go to an internal room in the building and close as many internal doors as possible. Do not go into the basement as many gases are heavier than air and will collect in low lying areas.

10) If the gas or vapor is soluble or even partly soluble in water - hold a wet cloth or handkerchief over your nose and mouth if the gases start to bother you. For a higher degree of protection, go into the bathroom, close the door, and turn on the shower in a strong spray to "wash" the air. Seal the openings of the bathroom as best you can. Don't worry about running out of air to breathe. This is highly unlikely in normal homes and buildings.

11) Tune in to the Emergency Broadcast System on your radio or television for further information and guidance.

## Evacuation

Large-scale evacuation in response to a hazardous materials incident should be considered when the following conditions are present:

1) There is a strong potential for toxic discharge, the discharge has not yet taken place, and there appears to be time available to relocate people.

2) The discharge has taken place, but people are a sufficient distance downwind to permit for evacuation.

3) People not in the direct path of a cloud are threatened by shift in the wind direction.

4) The safety hazards of evacuation are outweighed by the benefits of the action.

5) Sheltering-in-Place might not fully protect people from serious consequences.

## Shelters

Experience has shown that shelter space would need to be provided for only 30% of the population within the initial isolation and evacuation zones and the remaining 70% would seek shelter with family and friends outside the risk zone. Based on this, shelter space may be needed for approximately 4,200 individuals. If evacuation is determined to be necessary, contact:

American Red Cross 233-9300

The Red Cross will make the necessary shelter arrangements.

The table on the following page lists available shelter sites located within a reasonable distance of the vulnerability zone:

| SHELTER NAME | ADDRESS | CITY |
|---|---|---|
| CHEROKEE MIDDLE SCHOOL | 4301 CHEROKEE DR | MADISON |
| CRESTWOOD ELEMENTARY SCHOOL | 5930 OLD SAUK RD | MADISON |
| EDGEWOOD HIGH | 2219 MONROE STREET | MADISON |
| FALK ELEMENTARY SCHOOL | 6323 WOODINGTON WAY | MADISON |
| HAMILTON MIDDLE SCHOOL | 4801 WAUKESHA ST | MADISON |
| HUEGEL ELEMENTARY SCHOOL | 2601 PRAIRIE RD | MADISON |
| JAMES C WRIGHT MIDDLE SCHOOL | 3802 REGENT ST | MADISON |
| JEFFERSON MIDDLE SCHOOL | 101 S GAMMON RD | MADISON |
| LEOPOLD ELEMENTARY SCHOOL | 2602 POST ROAD | MADISON |
| LINCOLN ELEMENTARY SCHOOL | 909 SEQUOIA TRAIL | MADISON |
| MEMORIAL HIGH SCHOOL | 201 S GAMMON RD | MADISON |
| MIDVALE ELEMENTARY SCHOOL | 502 CAROMER DR | MADISON |
| MUIR ELEMENTARY SCHOOL | 6602 INNER DRIVE | MADISON |
| ORCHARD RIDGE ELEM. SCHOOL | 5602 RUSSETT ROAD | MADISON |
| RANDALL ELEMENTARY SCHOOL | 1802 REGENT ST | MADISON |
| SHOREWOOD HILLS ELEM. SCHOOL | 1105 SHOREWOOD BLVD | MADISON |
| STEPHENS ELEMENTARY SCHOOL | 120 S ROSA ROAD | MADISON |
| STONER PRAIRIE ELEMENTARY | 5830 DEVORO ROAD | MADISON |
| THOREAU ELEMENTARY SCHOOL | 3870 NAKOMA ROAD | MADISON |
| TOKI MIDDLE SCHOOL | 5606 RUSSETT RD | MADISON |
| VAN HISE ELEMENTARY SCHOOL | 4747 & 4801 WAUKESHA | MADISON |
| WEST HIGH SCHOOL | 30 ASH ST | MADISON |
| WINGRA SCHOOL INC | 3200 MONROE ST | MADISON |
| ELVEHJEM ELEMENTARY | 6009 JOHNSON ST | MCFARLAND |
| INDIAN MOUND MIDDLE SCHOOL | 6330 EXCHANGE ST | MCFARLAND |
| MCFARLAND ELEMENTARY | 6103 JOHNSON ST | MCFARLAND |
| MCFARLAND HIGH SCHOOL | 5101 FARWELL ST | MCFARLAND |
| EASTSIDE SCHOOL | 661 ELIZABETH ST | SUN PRAIRIE |
| NORTHSIDE SCHOOL | 230 KLUBERTANZ DRIVE | SUN PRAIRIE |
| ROYAL OAKS ELEMENTARY | 2215 PENNSYLVANIA AVE | SUN PRAIRIE |
| SUN PRAIRIE SENIOR HIGH | 220 KRONCKE DRIVE | SUN PRAIRIE |
| WESTSIDE ELEMENTARY | 1320 BUENA VISTA DRIVE | SUN PRAIRIE |
| WAUNAKEE HERITAGE ELEMENTARY | 501 SOUTH STREET | WAUNAKEE |
| WAUNAKEE MIDDLE SCHOOL | 1001 SOUTH STREET | WAUNAKEE |

## X. SPECIAL CONSIDERATIONS

**PLEASE NOTE:** IN the event of a chlorine leak at the Madison Kipp facility, an on site chlorine scrubber and containment system and if working properly, should keep the amount of chlorine leaving the facilities site to the atmosphere and the surrounding area to a bare minimum. The following special considerations are offered as a worst-case scenario:

The vulnerability analysis indicated that with a southerly wind "pushing" leaking chlorine north could impact the Dane County Regional Airport but only in the diluted amount of approximately 1 part per million. If it is determined that chlorine could be affecting the airport, the IC/EOC should consult and work with airport operations to determine the most appropriate response, likely shelter-in-place.

The risk zone maps indicate that a release of chlorine could affect Lake Mendota and Lake Monona. During summer peak times, numerous people may be on these lakes and the parks located on their shores. If it is determined that a release will affect these lakes, additional resources including the Dane County Sheriff Department boats will be needed to assist in population protection measures.

Interstate 39/90/94 is located in the extreme eastern edge of the vulnerability zone. If it deemed necessary to close the interstate system, the Wisconsin State Patrol would need to be contacted for assistance. Consideration should be given to notifying Wisconsin Emergency Management.

Many highly traveled roads in the City of Madison are within the vulnerability zone such as East Washington Avenue (US Highway151), Highway 30. North and South Stoughton Road (US Highway 51), and Highway 113. The South Beltline Highway should not be affected.

Many bike paths and hiking trails pass through the vulnerability zone. The Incident Commander should consider for the safety of these users.

The Wisconsin and Southern Railroad (WSOR) runs directly along the northern border of this site. If it is necessary to have traffic on this line shut down, contact WSOR at:

| | |
|---|---|
| Main Office: | 414-438-8820 |
| Dispatch: | 414-438-8837 |
| Weekend Supervisor: | 414-750-6406 |
| Madison Yard | 243-9140 |
| Janesville (After 10:00 pm) | 755-6228 |

Operating Frequencies:

| | |
|---|---|
| Main: | 160.575 |
| Alternate: | 161.145 |

Essentially the entire Madison Isthmus area is within the vulnerability zone. If a northeasterly wind pushes a chlorine leak southwest into the isthmus, several homes and businesses could be impacted including the downtown Madison area as well as the state capital building. Early warning would be paramount with possible "first-in" instructions to shelter-in-place.

In a chlorine release situation, activation of the Dane County Emergency Operations Center may be requested by the field Incident Commander or may be ordered by the County Emergency Management Director. Activation of the Emergency Operating Center will depend on the severity of the release and the potential for off-site consequences. The primary function of the EOC will be to coordinate the activities of the various political and emergency response agencies that will have responsibility for response to a widespread incident. The operation and responsibilities of the EOC are specified in the Dane County Emergency Operations Plan.

# CHLORINE

# $Cl_2$

Response Information Data Sheets

and

ALHOA Modeling Worksheets

# Chemical Identification/RIDS

**Chemical Name:** CHLORINE

**Regulatory Name:** CHLORINE

**NFPA Codes H:** 4 **NFPA Codes F:** 0 **NFPA Codes R:** 0 **NFPA Codes S:** Oxidizer

**Formula:** Cl2
**DOT:** POISON GAS, CORROSIVE
**UN Num:** 1017

| | | | | | |
|---|---|---|---|---|---|
| **Sec 112R:** | ☒ | **CAATQ:** | 2500 | **313:** | ☒ |
| **EHS:** | ☒ | **EHSTPQ:** | 100 | **RCRA:** | |
| **CERCLA:** | ☒ | **RQ:** | 10 | **CHRIS:** | CLX |
| **CAS:** | 7782-50-5 | **STCC:** | 4920523<br>4920539 | *National Response Center: 800-424-8802* | |

General Description

A greenish yellow gas with a pungent suffocating odor. Toxic by inhalation. Slightly soluble in water. Liquefies at -35°C and room pressure. Readily liquefied by pressure applied at room temperature. Density (as a liquid) 13.0 lb / gal. Contact with unconfined liquid can cause frostbite by evaporative cooling. Does not burn but, like oxygen, supports combustion. Long-term inhalation of low concentrations or short-term inhalation of high concentrations has ill effects. Vapors are much heavier than air and tend to settle in low areas. Contact CHEMTREC to activate chlorine response team 800-424-9300. Used to purify water, bleach wood pulp, and to make other chemicals.

Rate of onset: Immediate to hours

Persistence: Minutes to hours

Odor threshold: 3.5 ppm

Source/use/other hazard: Cleaner/disinfectant in many industries; water treatment; WWI war gas; irritating corr fumes heavier than air. (NOAA Reactivity 2007)

Fire Hazard

May ignite other combustible materials (wood, paper, oil, etc.). Mixture with fuels may cause explosion. Container may explode in heat of fire. Vapor explosion and poison hazard indoors, outdoors or in sewers. Hydrogen and chlorine mixtures (5-95%) are exploded by almost any form of energy (heat, sunlight, sparks, etc.). May combine with water or steam to produce toxic and corrosive fumes of hydrochloric acid. Emits highly toxic fumes when heated. Avoid plastics and rubber. Avoid heat and contact with hydrogen gas or powdered metals. (EPA, 1998)

Fire Fighting

Evacuate area endangered by gas. Stay upwind; keep out of low areas. Wear positive pressure breathing apparatus and full protective clothing. Move container from fire area if you can do so without risk. Spray cooling water on containers that are exposed to flames until well after fire is out. If it is necessary to stop the flow of gas, use water spray to direct escaping gas away from those effecting shut-off.

Will not burn, but most combustible materials will burn in chlorine as they do in oxygen; flammable gases will form explosive mixtures with chlorine. Dry chemical, carbon dioxide, water spray, fog or foam. (EPA, 1998)

Protective Clothing

Skin: Wear appropriate personal protective clothing to prevent skin from becoming frozen from contact with the liquid or from contact with vessels containing the liquid.

Eyes: Wear appropriate eye protection to prevent eye contact with the liquid that could result in burns or tissue damage from frostbite.

Wash skin: No recommendation is made specifying the need for washing the substance from the skin (either immediately or at the end of the work shift).

Remove: No recommendation is made specifying the need for removing clothing that becomes wet or contaminated.

Change: No recommendation is made specifying the need for the worker to change clothing after the work shift.

Provide: Quick drench facilities and/or eyewash fountains should be provided within the immediate work area for emergency use where there is any possibility of exposure to liquids that are extremely cold or rapidly evaporating. (NIOSH, 2003)

_____Dupont Average Standardized Breakthrough Times_____

Tychem® QC
immediate (less than 10 minutes)
Tychem® SL
more than 480 min.
Tychem® CPF 2
more than 480 min.
Tychem® 7500
more than 480 min.
Tychem® F
more than 480 min. (Actual breakthrough time; standardized data not available)
Tychem® CPF 3
more than 480 min.
Tychem® BR and Tychem® LV
more than 480 min.
Tychem® CPF 4
more than 480 min.
Tychem® Responder®
more than 480 min.
Tychem® TK
more than 480 min.
Tychem® Reflector®
more than 480 min. (Dupont, 2003)

_____Non-Fire Response_____

Keep material out of water sources and sewers. Attempt to stop leak if without undue personnel hazard. Do not apply water to point of leak in tank car or container. Apply water spray or mist to knock down vapors. Vapor knockdown water is corrosive or toxic and should be diked for containment. Land spill: Dig a pit, pond, lagoon, holding area to contain liquid or solid material. Dike surface flow using soil, sand bags, foamed polyurethane, or foamed concrete. Absorb bulk liquid with fly ash or cement powder. Neutralize with dilute caustic soda (NaOH) or soda ash ($Na_2CO_3$). Water spill: Add dilute caustic soda (NaOH). If dissolved, in region of 10 ppm or greater concentration, apply activated carbon at ten times the spilled amount. Use mechanical dredges or lifts to remove immobilized masses of pollutants and precipitates. (© AAR, 2003)

_____Health Hazard_____

Poisonous; may be fatal if inhaled. Contact may cause burns to skin and eyes. Bronchitis or chronic lung conditions. (EPA, 1998)

_____Properties_____

Auto Igtn Temp: Not flammable (USCG, 1999)

Melting Point: -150° F (EPA, 1998)

Vapor Pressure: 7600 mm Hg at 86° F (EPA, 1998)

Vapor Density: 2.49 (EPA, 1998)

Boiling Point: -30.3° F at 760 mm Hg (EPA, 1998)

Molecular Weight: 70.91 (EPA, 1998)

IDLH: 10 ppm (NIOSH, 2003)

TLV TWA: 0.5 ppm Not classifiable as a human carcinogen. (ACGIH, 2003)

TLV STEL: 1 ppm Not classifiable as a human carcinogen. (ACGIH, 2003)

ERPG1: 1 ppm (AIHA, 2003)

ERPG2: 3 ppm (AIHA, 2003)

ERPG3: 20 ppm (AIHA, 2003)

Water Solubility: 0.7 % (NIOSH, 2003)

Specific Gravity: 1.424 at 59° F (USCG, 1999)

AEGL1: .5 ppm for 10 min
.5 ppm for 30 min
.5 ppm for 60 min
.5 ppm for 4 hrs
.5 ppm for 8 hrs (AEGL, 2003)

AEGL2: 2.8 ppm for 10 min
2.8 ppm for 30 min
2 ppm for 60 min
1 ppm for 4 hrs
.7 ppm for 8 hrs (AEGL, 2003)

AEGL3: 50 ppm for 10 min
28 ppm for 30 min
20 ppm for 60 min
10 ppm for 4 hrs
7.1 ppm for 8 hrs (AEGL, 2003)

## First Aid

Warning: Effects may be delayed. Caution is advised. Chlorine is corrosive and may be converted to hydrochloric acid in the lungs.

Signs and Symptoms of Acute Chlorine Exposure: Signs and symptoms of acute exposure to chlorine may include tachycardia (rapid heart rate), hypertension (high blood pressure) followed by hypotension (low blood pressure), and cardiovascular collapse. Pulmonary edema and pneumonia are often seen. The eyes, nose, throat, and chest may sting or burn following exposure [illegible] bloody sputum, a feeling of suffocation, dizziness, agitation, anxiety, nausea, and vomiting are common. Dermal exposure may result in sweating, pain, irritation, and blisters.

Emergency Life-Support Procedures: Acute exposure to chlorine may require decontamination and life support for the victims. Emergency personnel should wear protective clothing appropriate to the type and degree of contamination. Air-purifying or supplied-air respiratory equipment should also be worn, as necessary. Rescue vehicles should carry supplies such as chlorine-resistant plastic sheeting and disposable bags to assist in preventing spread of contamination.

Inhalation Exposure:
1. Move victims to fresh air. Emergency personnel should avoid self-exposure to chlorine.
2. Evaluate vital signs including pulse and respiratory rate, and note any trauma. If no pulse is detected, provide CPR. If not breathing, provide artificial respiration. If breathing is labored, administer oxygen or other respiratory support.
3. Obtain authorization and/or further instructions from the local hospital for administration of an antidote or performance of other invasive procedures.
4. Transport to a health care facility.

Dermal/Eye Exposure:
1. Remove victims from exposure. Emergency personnel should avoid self- exposure to chlorine
2. Evaluate vital signs including pulse and respiratory rate, and note any trauma. If no pulse is detected, provide CPR. If not breathing, provide artificial respiration. If breathing is labored, administer oxygen or other respiratory support.
3. Remove contaminated clothing as soon as possible.
4. If eye exposure has occurred, eyes must be flushed with lukewarm water for at least 15 minutes.
5. Wash exposed skin areas for at least 15 minutes with soap and water
6. Obtain authorization and/or further instructions from the local hospital for administration of an antidote or performance of other invasive procedures.
7. Transport to a health care facility.

Ingestion Exposure: No information is available. (EPA, 1998)

Reactivity

AIR AND WATER REACTIONS:

Water dissolves about twice its volume of chlorine gas, forming a mixture of hydrochloric acid and hypochlorous acids. Will be corrosive due to acidity and oxidizing potential.

CHEMICAL PROFILE:

CHLORINE reacts explosively with or supports the burning of numerous common materials. Ignites steel at 100°C in the presence of soot, rust, carbon, or other catalysts. Ignites dry steel wool at 50°C. Reacts as either a liquid or gas with alcohols (explosion), molten aluminum (explosion), silane (explosion), bromine pentafluoride, carbon disulfide (explosion catalyzed by iron), 1-chloro-2-propyne (excess chlorine causes an explosion), dibutyl phthalate (explosion at 118°C), diethyl ether (ignition), diethyl zinc (ignition), glycerol (explosion at 70-80°C), methane over yellow mercury oxide (explosion), acetylene (explosion initiated by sunlight or heating), ethylene over mercury, mercury(I) oxide, or silver(I) oxide (explosion initiated by heat or light), gasoline (exothermic reaction then detonation), naphtha-sodium hydroxide mixture (violent explosion), zinc chloride (exothermic reaction), wax (explosion), hydrogen (explosion initiated by light), Reacts as either a liquid or gas with carbides of iron, uranium and zirconium, with hydrides of potassium sodium and copper, with tin, aluminum powder, vanadium powder, aluminum foil, brass foil, copper foil, calcium powder, iron wire, manganese powder, potassium, antimony powder, bismuth, germanium, magnesium, sodium, and zinc. Causes ignition and a mild explosion when bubbled through cold methanol. Explodes or ignites if mixed in excess with ammonia and warmed. Causes ignition in contact with hydrazine, hydroxylamine, and calcium nitride. Forms explosive nitrogen trichloride from biuret contaminated with cyanuric acid. Readily forms an explosive N-chloro derivative with aziridine. Ignites or explodes with arsine, phosphine, silane, diborane, stibine, red phosphorus, white phosphorus, boron, active carbon, silicon, arsenic. Ignites sulfides at ambient temperature. Ignites (as a liquid) synthetic and natural rubber. Ignites trialkylboranes and tungsten dioxide.

REACTIVE GROUPS:

Inorganic Oxidizing Agents, Halogenating Agents, Strong (NOAA Reactivity 2007)

Reactive Hazards

Strong Oxidizing Agent

SITE DATA:
Location: MADISON, WISCONSIN
Building Air Exchanges Per Hour: 0.19 (sheltered double storied)
Time: July 7, 2010 0600 hours CDT (user specified)

CHEMICAL DATA:
Chemical Name: CHLORINE Molecular Weight: 70.91 g/mol
AEGL-1(60 min): 0.5 ppm AEGL-2(60 min): 2 ppm AEGL-3(60 min): 20 ppm
IDLH: 10 ppm
Carcinogenic risk - see CAMEO
Ambient Boiling Point: -30.5° F
Vapor Pressure at Ambient Temperature: greater than 1 atm
Ambient Saturation Concentration: 1,000,000 ppm or 100.0%

ATMOSPHERIC DATA: (MANUAL INPUT OF DATA)
Wind: 3.4 miles/hour from 220° true at 3 meters
Ground Roughness: urban or forest Cloud Cover: 0 tenths
Air Temperature: 65° F Stability Class: E
No Inversion Height Relative Humidity: 50%

SOURCE STRENGTH:
Direct Source: 150 pounds/min Source Height: 0
Release Duration: 10 minutes
Release Rate: 150 pounds/min
Total Amount Released: 1,500 pounds
Note: This chemical may flash boil and/or result in two phase flow.

THREAT ZONE:
Model Run: Heavy Gas
Red : 4.1 miles --- (1 ppm)
Orange: 2.5 miles --- (3 ppm = ERPG-2)
Yellow: 1.3 miles --- (10 ppm = IDLH)

THREAT AT POINT:
Concentration Estimates at the point:
Downwind: 4.1 miles Off Centerline: 0 miles
Max Concentration:
Outdoor: 1.01 ppm
Indoor: 0.0424 ppm

Toxic Threat Zone

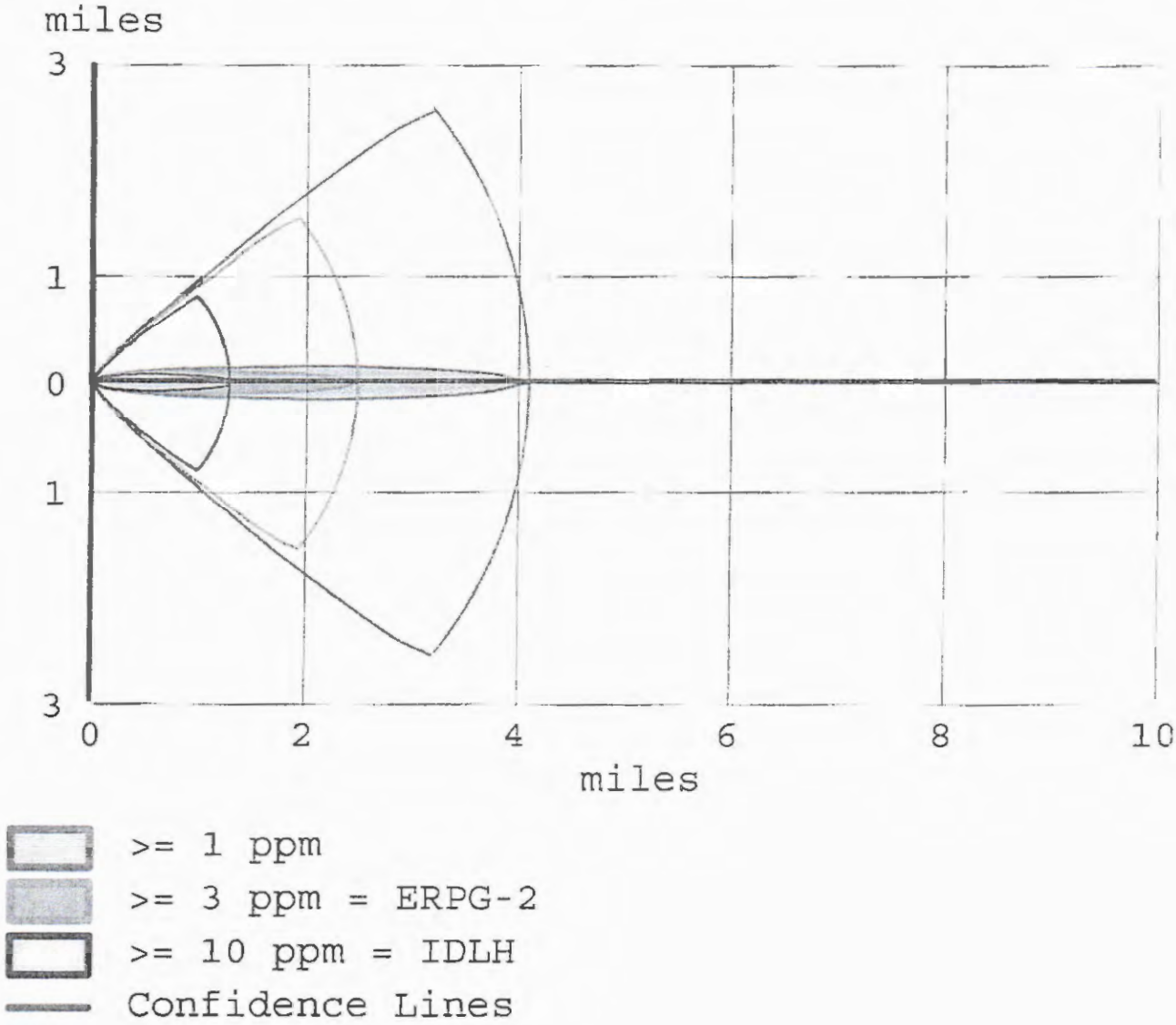
ALOHA® 5.4.1

Time: July 7, 2010 0600 hours CDT (user specified)

Chemical Name: CHLORINE
Carcinogenic risk - see CAMEO

Wind: 3.4 miles/hour from 220° true at 3 meters

THREAT ZONE:
Model Run: Heavy Gas
Red : 4.1 miles --- (1 ppm)
Orange: 2.5 miles --- (3 ppm = ERPG-2)
Yellow: 1.3 miles --- (10 ppm = IDLH)



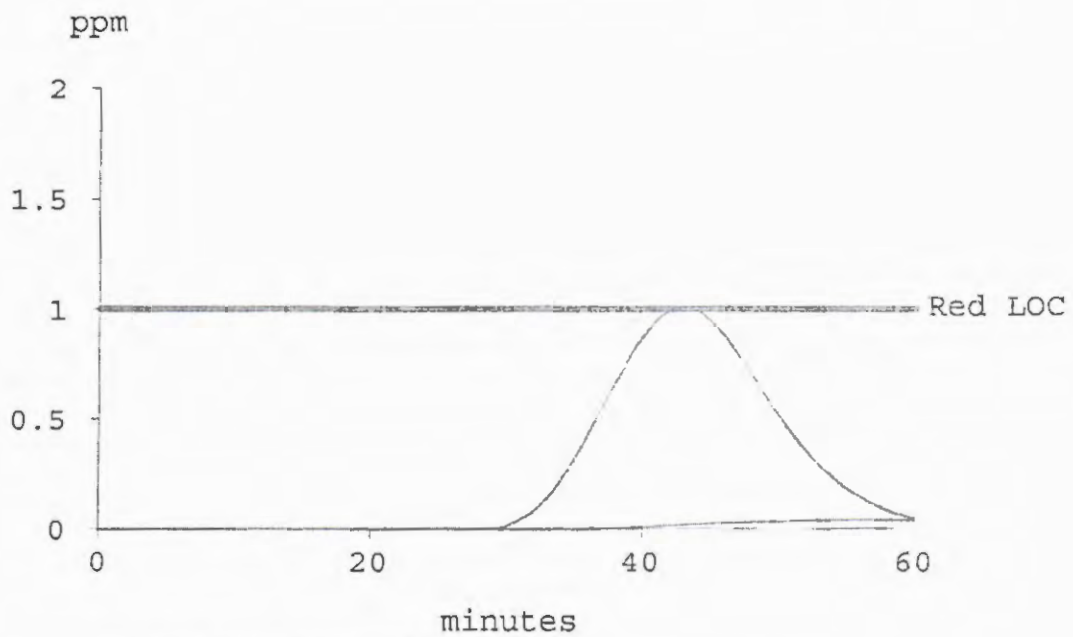
Concentration at Point ALOHA® 5.4.1

Time: July 7, 2010 0600 hours CDT (user specified)

Chemical Name: CHLORINE
Carcinogenic risk - see CAMEO

Building Air Exchanges Per Hour: 0.19 (sheltered double storied)

THREAT AT POINT:
Model Run: Heavy Gas
Concentration Estimates at the point:
Downwind: 4.1 miles Off Centerline: 0 miles
Max Concentration:
Outdoor: 1.01 ppm
Indoor: 0.0424 ppm




—— Outdoor Concentration
—— Indoor Concentration
At Point: Downwind: 4.1 miles Off Centerline: 0 miles

SITE DATA:
Location: MADISON, WISCONSIN
Building Air Exchanges Per Hour: 0.56 (sheltered double storied)
Time: July 7, 2010 0600 hours CDT (user specified)

CHEMICAL DATA:
Chemical Name: CHLORINE Molecular Weight: 70.91 g/mol
AEGL-1(60 min): 0.5 ppm AEGL-2(60 min): 2 ppm AEGL-3(60 min): 20 ppm
IDLH: 10 ppm
Carcinogenic risk - see CAMEO
Ambient Boiling Point: -30.5° F
Vapor Pressure at Ambient Temperature: greater than 1 atm
Ambient Saturation Concentration: 1,000,000 ppm or 100.0%

ATMOSPHERIC DATA: (MANUAL INPUT OF DATA)
Wind: 11.9 miles/hour from 220° true at 3 meters
Ground Roughness: urban or forest Cloud Cover: 0 tenths
Air Temperature: 65° F Stability Class: D
No Inversion Height Relative Humidity: 50%

SOURCE STRENGTH:
Direct Source: 150 pounds/min Source Height: 0
Release Duration: 10 minutes
Release Rate: 150 pounds/min
Total Amount Released: 1,500 pounds
Note: This chemical may flash boil and/or result in two phase flow.

THREAT ZONE:
Model Run: Heavy Gas
Red : 2.1 miles --- (1 ppm)
Orange: 1.2 miles --- (3 ppm = ERPG-2)
Yellow: 1101 yards --- (10 ppm = IDLH)

THREAT AT POINT:
Concentration Estimates at the point:
Downwind: 2.1 miles Off Centerline: 0 miles
Max Concentration:
Outdoor: 1 ppm
Indoor: 0.0883 ppm

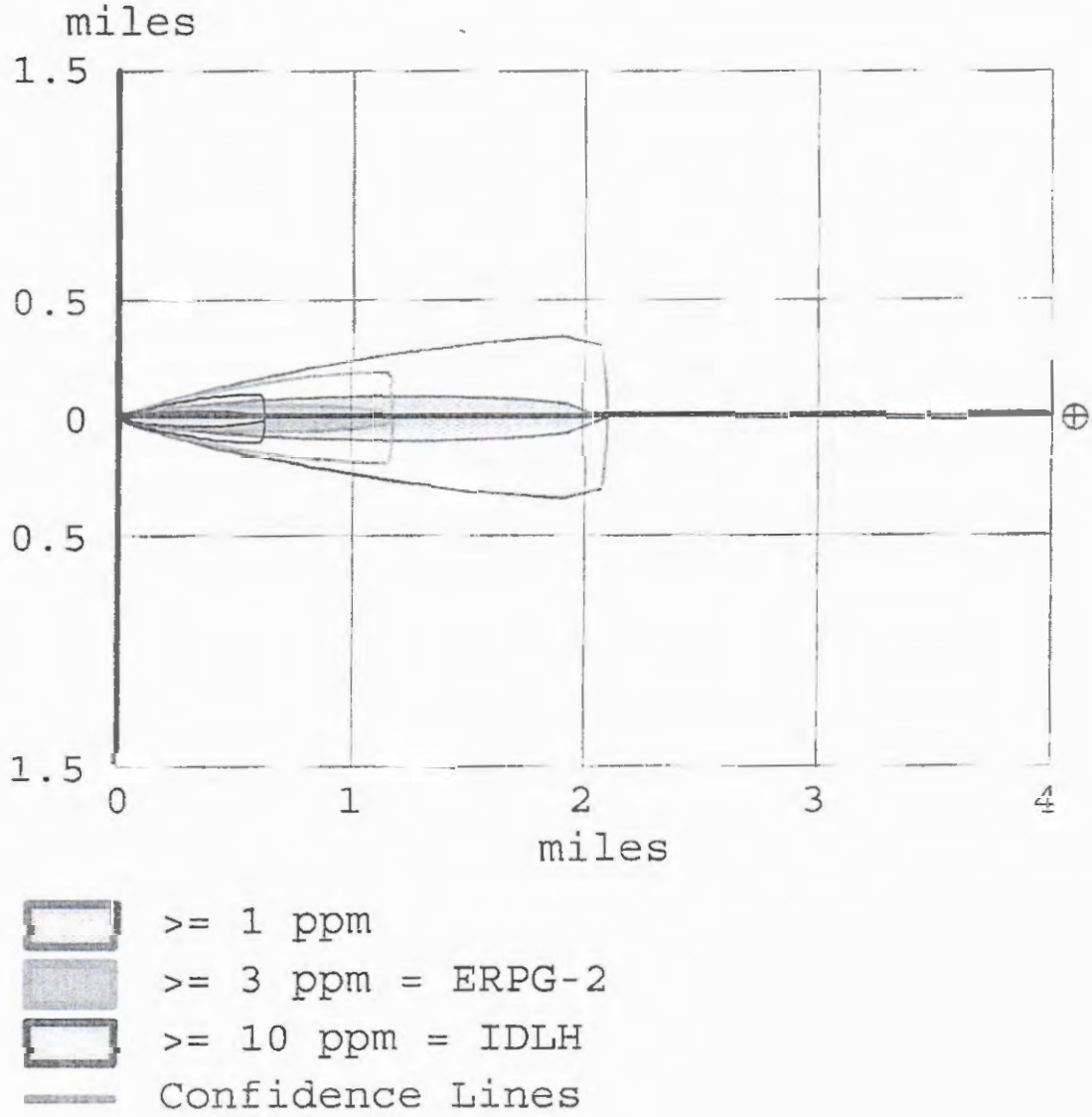
Toxic Threat Zone ALOHA® 5.4.1

Time: July 7, 2010 0600 hours CDT (user specified)

Chemical Name: CHLORINE
Carcinogenic risk - see CAMEO

Wind: 11.9 miles/hour from 220° true at 3 meters

THREAT ZONE:
Model Run: Heavy Gas
Red : 2.1 miles --- (1 ppm)
Orange: 1.2 miles --- (3 ppm = ERPG-2)
Yellow: 1101 yards --- (10 ppm = IDLH)



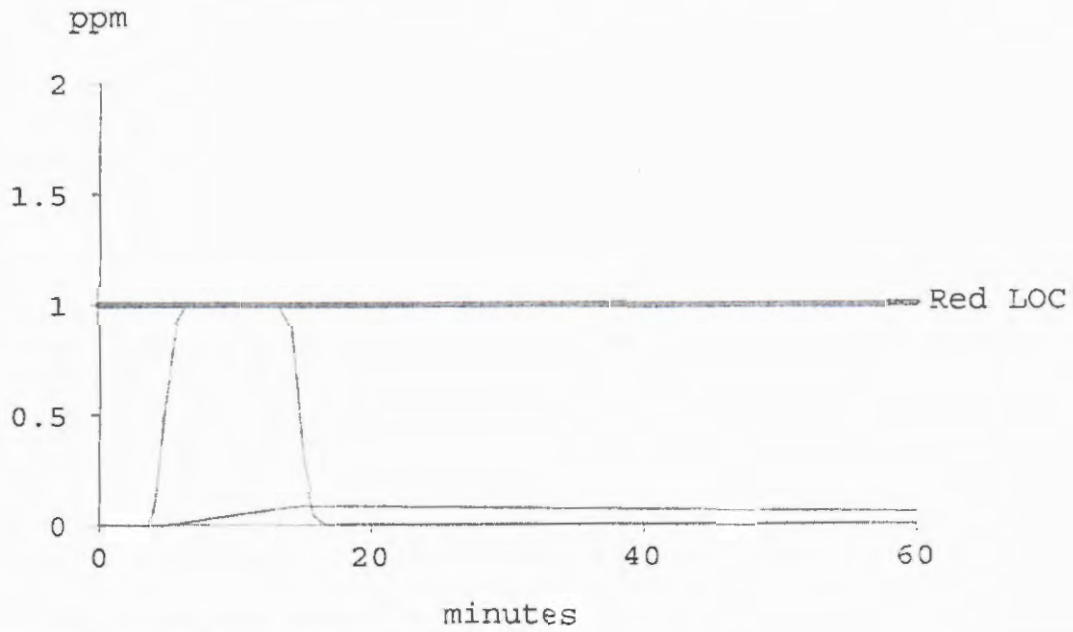
Concentration at Point ALOHA® 5.4.1

Time: July 7, 2010 0600 hours CDT (user specified)

Chemical Name: CHLORINE
Carcinogenic risk - see CAMEO

Building Air Exchanges Per Hour: 0.56 (sheltered double storied)

THREAT AT POINT:
Model Run: Heavy Gas
Concentration Estimates at the point:
Downwind: 2.1 miles Off Centerline: 0 miles
Max Concentration:
Outdoor: 1 ppm
Indoor: 0.0883 ppm




—— Outdoor Concentration

—— Indoor Concentration

At Point: Downwind: 2.1 miles Off Centerline: 0 miles

DISTRIBUTION RECORD:

**MADISON KIPP CORPORATION**
**201 WAUBESA STREET**
**MADISON, WI 53704**
**003893-0**

| Distribution by US Mail | Distribution by E-Sponder |
|---|---|
| Wisconsin Emergency Management<br>Attn: Paul France<br>2445 Darwin Road Ste 100<br>Madison 54704 | Dane County Emergency Management |
| Madison Kipp Corporation<br>Attn: Kim Eggers<br>201 Waubesa Street<br>Madison 53704 | Dane County 911 |
| Madison Police Department<br>CCB – GR 28 | HIT 6 |