Village of Hinsdale
Environment and Public Services Committee
Meeting Agenda
Monday, February 13, 2012
7:30 P.M.
Memorial Hall Board Room

1. Approval of Minutes – January 24, 2012
2. Public Services Monthly Report
   a) Proposed Parkway Tree Removal (105 N. Vine Street)
   b) IPM Annual Report
   c) Emerald Ash Borer-Treatment Options (Discussion Item)
   d) Decorative Street Lamp Options for LED Conversion (Discussion Item)
   e) Mosquito Abatement Services (Discussion Item)
3. Engineering Monthly Report
   a) 2011-12 Projects Update
   b) State and Federal Funding Opportunities
4. Request for Board Action
   a) To Recommend Adoption of an Ordinance Vacating Half of a Public Alley Right-of-Way Situated West and Adjoining 228 East Fuller Road at a Purchase Price of $45,000.
   b) To Award the Extension of Contract #1380 Between the Village of Hinsdale and Allied Waste Services for the Collection and Disposal of Residential Solid Waste, Landscape Waste and Recyclable Materials for Three Years (3) with Revised Pricing to Commence on May 1, 2012.
5. Adjournment

Items listed on the agenda will be discussed and considered by the Committee. The Committee welcomes public comment on the agenda items during discussion. Items that were previously discussed by one of the Village's Commissions and referred to the Committee for further consideration are noted on the agenda. Items recommended for approval at this meeting are then referred to the Village Board for further consideration at their next meeting. Items that are unanimously recommended for approval will be placed under the Consent Agenda section of the Board meeting. Items that do not receive a unanimous recommendation will be placed under the Committee Agenda section of the Board meeting.

The Village of Hinsdale is subject to the requirements of the Americans with Disabilities Act of 1990. Individuals with disabilities who plan to attend this meeting and who require certain accommodations in order to allow them to observe and/or participate in this meeting, or who have questions regarding the accessibility of the meeting or the facilities, are requested to contact Darrell Langlois, ADA Coordinator, at 630-789-7014, **or by TDD at 630-789-7022,** promptly to allow the Village of Hinsdale to make reasonable accommodations for those persons. Village Web Site: www.villageofhinsdale.org

VILLAGE OF HINSDALE
ENVIRONMENT AND PUBLIC SERVICES COMMITTEE MINUTES
TUESDAY, JANUARY 24, 2012

Chairman Laura LaPlaca called the meeting of the Environment and Public Services Committee to order at 6:33 P.M., Tuesday January 24, 2012, in Memorial Hall of the Memorial Building, 19 East Chicago Avenue, Hinsdale, IL.

PRESENT: Chairman Laura LaPlaca, Trustee Doug Geoga, Trustee William Haarlow, Trustee Bob Saigh

ABSENT: None

ALSO PRESENT: Dave Cook, Village Manager; George Franco, Director of Public Services; Robert McGinnis, Director of Community Development; Dan Deeter, Village Engineer; Tom Bueser, Deputy Director of Public Services; John Finnell, Village Forester; Dan Hopkins, Village Horticulturist.

Approval of Minutes – December 12, 2011

The EPS Committee reviewed the minutes from the December 12, 2011 meeting. Trustee Saigh motioned for approval of the December 12, 2011 minutes. Trustee Geoga seconded. Trustees Geoga and Saigh votes Yes. Trustee Haarlow abstained. The motion passed.

Public Services Monthly Report

Mr. Franco updated the committee on the status of the Public Service Department. He noted the difference in overtime hours from 2010 to 2011. This was attributed to the mild winter and reduced need for snow plowing. He noted that there were two water main breaks in December. He also responded to Trustees' questions concerning the Public Services packet's information.

Business District Planting Beds (Discussion Item)

Chairman LaPlaca introduced this item. Mr. Franco and Mr. Hopkins added their comments about this issue. Staff would like to convert 13 of the 38 flower beds to sustainable landscaping. This would include planning perennial plants that are salt and drought tolerant. Mr. Hopkins said this program would not produce any savings in the first (planting) year. But, it should provide some savings to the village in subsequent years. The 13 beds would be test beds to understand which plants were hardiest and were the most attractive. Mr. Franco and Hopkins responded to Trustees' questions. Trustee Haarlow suggested that the planting best should be placed in the business areas north of the tracks. Mr. Franco said that staff would study and develop a plan to implement this suggestion. The committee approved the staff's request to convert 13 flower beds to sustainable landscaping.

Private Property Ice Rinks (Discussion Item)

Chairman LaPlaca explained the historical and legal issues involved with this discussion item. Mr. McGinnis added his comments. The Village has taken a "hands-off" approach towards private ice rinks in the past. The committee discussed whether the Village should regulate these ice rinks under the Zoning Ordinance as temporary structures. Considering the previous village practice(s) and the fact that there has been only one complaint registered with the Village to date, the committee chose to not regulate the ice rinks under the Zoning Ordinance at this time. Chairman LaPlaca stated that residents with ice rinks should operate them under good neighbor rules and that common courtesy applies. Future individual complaints will be handled by the Police Department. The Community Development Department will send a letter to residents with a private ice rink educating them about where rinks can be located in the future.

Residential Refuse/Landscape Waste Removal and Recycling

Chairman LaPlaca introduced this agenda item. Mr. Franco provided his comments. The Village negotiated with Allied Waste concerning the services and cost structure of a three year extension to the current garbage collection contract. The committee discussed the issues and asked questions of Mr. Rich Vandermolen, the Allied Waste representative. The committee authorized staff to prepare a request for board action for contract #1380 for the February EPS meeting

Proposed Parkway Tree Removal at 5607 S. Park Street

Mr. Franco is considering a variety of LED street lights to replace existing lights as they fail. Advantages of LED lights include improved night visibility, lower operating & maintenance costs, and lower environmental "footprint". Staff has placed a variety of LED lamps in the drive north of the Village Hall for viewing. Staff will revisit this topic during the February EPS meeting to get the trustees' input.

Permission to Seek Bids

Mr. Franco is requesting the committee's permission to seek bids on annual services including: fuel, sewer and catch basin cleaning, water main leak detection, elm inoculation/ Ash treatments, mosquito abatement, and Water Plant filter media removal/ replacement. The committee authorized staff to seek bids.

Engineering Monthly Report

Mr. Deeter updated committee on the status of Veeck Park restoration, Oak Street Bridge replacement, 2011 Resurfacing Project, the Chestnut Street Project, 2012 Resurfacing and Reconstruction Projects, and the 2013 Resurfacing and Reconstruction Projects. On 11/16/11, the DuPage Mayors and Managers Conference approved the allocation of State Transportation Project (STP) funds for four Hinsdale projects in 2017. This brings the total amount of grant funds awarded to $24,190,000.

Approval of an Ordinance Vacating Half of a Public Alley Right-of-Way situated West and Adjoining 702 S. Monroe Street at a Purchase Price of $12,000. Chairman LaPlaca introduced this agenda item. Mr. Deeter provided further information and answered trustees' questions. Trustee Saigh motioned to approve. Trustee Geoga seconded. The motion passed unanimously.

Adjournment

With no further issues to be brought before the Committee, Trustee Saigh moved to adjourn. Trustee Haarlow seconded. Motion carried and the meeting was adjourned at 7:20 P.M.

Respectfully submitted,

Dan Deeter
Village Engineer

MEMORANDUM

TO: CHAIRMAN LA PLACA AND THE EPS COMMITTEE

FROM: GEORGE FRANCO

SUBJECT: PUBLIC SERVICES MONTHLY REPORT-JAN. 2012

Date: 2/7/12

The Public Service Department dispatched snow and ice crews 9 times during January, plowing snow/ice and spreading 376 tons of rock salt, 63 tons of sand, and 1400 gallons of liquid calcium chloride on Village roadways with another 4½ tons of material used to treat village sidewalks, ramps, and stairs. The cost for chemicals used was $28,132.32 for rock salt, $1,118.25 for sand, $3,512.00 for bagged material, and $896.00 for liquid calcium chloride for a total monthly chemical cost of $33,658.57. These crews have logged approximately 404 overtime hours and 213 regular hours to combat the weather conditions, which included removing the snow/ice from the Business District two times during January. The sidewalks in the Business District have been shoveled twice during the month for a cost of $1,350.00. A comparison of time and materials related to snow and ice operations from this year to last year (through January 31) is as follows:

	FY 2011-12	**FY 2010-11**
Crews Dispatched	12	28
Regular hours	218	564
Overtime hours	460	940.5
Salt	433 tons	658.5 tons
Sand	77 tons	333 tons
Bagged Material	5.85 tons	.5 tons
Liquid Calcium	1,400/gal	2,200/gal
Estimated Chemical Cost	**$38,854.31**	**$57,757.52**

All snow and ice removal equipment has been inspected and repaired after every snow event, and is considered to be in good working order. Public Service crews also responded to and repaired 7 water main breaks during the month of January. These crews logged approximately 116 overtime hours to make these repairs to the water system. The dates, locations, and pipe sizes of the water main breaks are as follows:

- 1/4/12 The Lane and Garfield 12 inch cast iron main
- 1/17/12 5533 S. Bruner St. 8 inch cast iron main
- 1/18/12 Chicago Ave. and Washington St. 4 inch cast iron main
- 1/19/12 918 S. Bodin St. 6 inch cast iron main
- 1/19/12 549 58th St. 6 inch cast iron main
- 1/23/12 824 Phillippa St. 6 inch cast iron main
- 1/26/12 Elm St. and Hickory St. 12 inch cast iron main

The Public Service Department has been involved with other projects, which include:

- The start of the small tree pruning program, with Village crews pruning 492 trees with a diameter of 15 inches or less.
- The continuation of the tree pruning contract, with The Care of Trees pruning 577 parkway trees with a diameter of over 9 inches.
- Removal of Christmas decorations from the Business District and Burlington park.
- A complete round of pot-hole patching, with crews now focusing on trouble areas throughout town.
- Public Services staff has applied for an *Illinois Urban Forest Restorationnt for the Emerald Ash Borer.*

- Public Services staff has reviewed and commented on nine tree preservation plans submitted for building/demolition permits.

- Monitoring of sump pump discharge locations, which require maintenance to remove icing hazards on roadways. During January, crews used approximately 12.5 tons of salt and 25 man hours to salt and scrape the ice from various locations.

Cc: Dave Cook, President Cauley, and Board of Trustees

PUBLIC SERVICE MONTHLY REPORT FOR JAN. 2012.00

ROADWAY

84.00	SIGNS
9.00	POSTS
4.00	SIGNS REPAIRED
12.50	TONS OF COLD MIX USED FOR POTHOLES
0.00	TONS OF HOT MIX
3.00	TONS OF GRAVEL FOR ALLEYS ACT,
0.00	WHITE PAINT
0.00	YELLOW PAINT
0.00	MAN HOURS BASIN TOP CLEANING
7.50	MAN HOURS ALLEY GRADING
0.00	MAN HOURS ALLEY TRIMMING
0.00	YARD OF CONCRETE

SNOW / ICE

9.00	Times crews where called out for snow and ice.
376.00	Tons of road salt used
63.00	Tons of sand used
4.50	Tons of salt + calcium for walks, ramps, stairs and train platforms.

TREE MAINT

528.00	TREES TRIMMED BY VILLAGE STAFF
3.00	TREES REMOVED BY VILLAGE STAFF
0.00	ELM TREES DETECTED BY STAFF Pub.. Private
0.00	ELM TREES REMOVED BY STAFF
0.00	ELM TREES THAT HAVE HAD AMPUTATED LIMBS
0.00	TREE STUMPS REMOVED BY STAFF
0.00	TREES PLANTED BY STAFF
577.00	TREES TRIMMED BY CONTRACTOR(to date)
0.00	NON ELMS REMOVED BY CONTRACTOR
0.00	ELMS REMOVED BY CONTRACTOR
0.00	ASH TREES REMOVED DUE TO EAB

EQUIP MAINT

10.00	SCHEDULED MAINT
46.00	UNSCHEDULED REPAIRS

WATER OPERATIONS

61176.00	GALLON OF WATER PUMPED TO DISTRIBUTION SYSTEM
65841.00	PUMPED IN JANUARY 2011
125.00	FEET OF SEWER LINES CLEANED
0.00	FEET OF SEWER LINE TELEVISED
0.00	SEWER BACKUP INVESTIGATIONS
0.00	BASINS REPAIRED
0.00	BASINS REBUILT
0.00	BASINS CLEAN FROM DEBRIS INSIDE
135.00	METER READINGS
56.00	WATER METERS REPAIRED
46.00	WATER METERS INSTALLED

0.00	HYDRANTS REPAIRED
3.00	HYDRANTS FLUSHED
7.00	WATER MAINS REPAIRED
0.00	SEWER SERVICE LOCATED
129.00	J U L I E LOCATE REQUEST
2.00	WATER CONNECT OR DISCONNECT INSPECTIONS
19.00	VALVES EXERCISED
1.00	VALVES REPAIRED
45.00	WATER METERS REMOVED
0.00	SEWER CONNECT INSPECTIONS
0.00	FOUNTAINS SERVICED

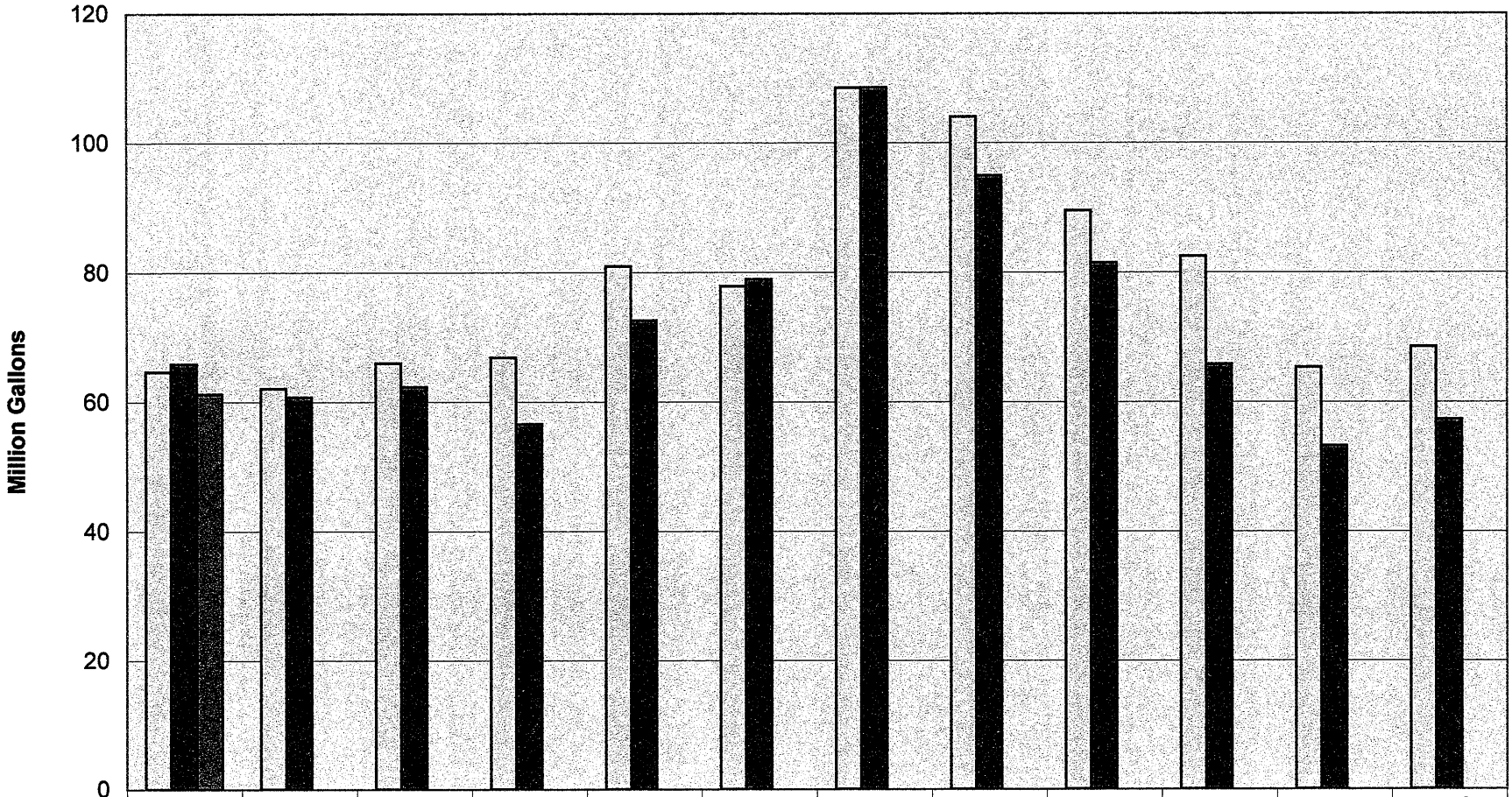
PARKS MAINTENANCE

Parks maintenance crews have been keeping up with general maintenance which includes garbage and litter pick and cleaning of the restrooms at Klm and Burns Field. Crews have cut back and cleared fencelines at Brook Park, KLM, Pierce Park, and Burns Field. The Jackson Street prarie has been prepped for the yearly controlled burn. Crews have begun performing maintenance and repairs on all hand tools to ensure proper operation for the upcoming spring and summer seasons.

BUILDING MANTENANCE

Building maintenance crews have been monitoring and servicing heating systems in Village owned buildings, making repairs as needed. Crews have been completing routine maintenance at the platform tennis courts and the emergency generators at the Memorial Building and Police/Fire Departments. Crews completed service calls at: KLM which included repairs to HVAC controls, ice maker repairs, and repairs to the waiter elevator, the Public Services building which included repairs to the hot water tank and overhead door, the Water Plant building which included repair to a 3" drain line and the freight elevator, and heater repair at the Police Department. Crews also painted the exterior wood trim around the entrance to Village Hall and made outdoor lighting repairs at the entrance to KLM.

MONTHLY PUMPAGE



	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
2010	64.604	62.054	65.947	66.825	80.944	77.853	108.483	104.012	89.483	82.483	65.326	68.502
2011	65.841	60.698	62.305	56.59	72.538	78.929	108.499	94.887	81.438	65.793	53.204	57.319
2012	61.176											

VILLAGE OF HINSDALE - IL 0434520

MONTHLY REPORT

Month: January, 2012

		Finished Water					
Day	Dist x1000	Free CL_2 Avg (mg/l)	Turbidity Avg (NTU)	Fluoride Avg (mg/l)	H_2O Temp Average	Air Temp Average	Total Precip
1	1726	0.86	0.02	1.05	44	40	0.00
2	1844				43		0.00
3	2080	0.88	0.03	1.09	43	24	0.00
4	2060	0.86	0.02	1.07	42	32	0.00
5	1964	0.84	0.02	1.06	42	42	0.00
6	1900	0.89	0.03	1.01	42	45	0.00
7	1867	0.90	0.03	1.03	42	48	0.00
8	1939				42		0.00
9	1907	0.94	0.03	0.98	42	36	0.00
10	1920	0.88	0.02	1.01	42	37	0.00
11	1921	0.87	0.03	0.98	42	34	0.00
12	1907	0.91	0.02	1.05	42	30	0.00
13	1848	0.81	0.02	1.11	42	28	0.00
14	1977	0.90	0.02	1.06	42		0.00
15	1848				41		0.00
16	1964	0.91	0.02	0.98	41	30	0.00
17	1899	0.79	0.02	1.10	41	36	0.00
18	2070	0.83	0.02	1.11	41	30	0.00
19	2041	0.90	0.02	1.01	40	19	0.00
20	2124	0.85	0.02	0.98	40	7	0.00
21	2097	0.88	0.02	1.02	40	15	0.00
22	2066				39		0.00
23	2134	0.92	0.02	1.01	40	40	0.00
24	2152	0.85	0.02	1.06	40	32	0.00
25	2114	0.78	0.02	1.08	39	30	0.00
26	2046	0.82	0.02	1.07	39	38	0.00
27	1916	0.84	0.02	1.06	39	40	0.00
28	1860	0.85	0.02	1.08	40		0.00
29	1957				39		0.00
30	2067	0.86	0.02	1.07	39	33	0.00
31	1961	0.88	0.02	1.09	40	45	0.00

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Day	Dist x1000	Free CL_2 Avg (mg/l)	Turbidity Avg (NTU)	Fluoride Avg (mg/l)	H_2O Temp Average	Air Temp Average	Total Precip
Sum:	61176						0.00
Avg:	1973	0.87	0.02	1.05	41	33	0.00
Max:	2152	0.94	0.03	1.11	44	48	0.00
Min:	1726	0.78	0.02	0.98	39	7	0.00

Reported By: Mark Pelkowski

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VILLAGE OF HINSDALE, PLANT REPORT

Month: January, 2012

Day	Flow			CL_2 Residual		Turbidity	Fluoride	H_2O Temp	Air Temp	Total
	Valve 1 (kgal)	Valve 2 (kgal)	Total (kgal)	Analyzer (ppm)	Lab (ppm)	Average (NTU)	Average (ppm)	Average (F)	Average (F)	Precip (in)
1	1726	0	1726	0.80	0.86	0.02	1.05	44	40	0.00
2	1844	0	1844	0.84				43		0.00
3	2080	0	2080	0.82	0.88	0.03	1.09	43	24	0.00
4	2060	0	2060	0.80	0.86	0.02	1.07	42	32	0.00
5	1964	0	1964	0.78	0.84	0.02	1.06	42	42	0.00
6	1900	0	1900	0.79	0.89	0.03	1.01	42	45	0.00
7	1867	0	1867	0.79	0.90	0.03	1.03	42	48	0.00
8	1939	0	1939	0.78				42		0.00
9	1907	0	1907	0.78	0.94	0.03	0.98	42	36	0.00
10	1920	0	1920	0.81	0.88	0.02	1.01	42	37	0.00
11	1921	0	1921	0.86	0.87	0.03	0.98	42	34	0.00
12	1907	0	1907	0.93	0.91	0.02	1.05	42	30	0.00
13	1848	0	1848	0.90	0.81	0.02	1.11	42	28	0.00
14	1977	0	1977	0.77	0.90	0.02	1.06	42		0.00
15	1848	0	1848	0.69				41		0.00
16	1964	0	1964	0.80	0.91	0.02	0.98	41	30	0.00
17	1899	0	1899	0.79	0.79	0.02	1.10	41	36	0.00
18	2070	0	2070	0.70	0.83	0.02	1.11	41	30	0.00
19	2041	0	2041	0.68	0.90	0.02	1.01	40	19	0.00
20	2124	0	2124	0.68	0.85	0.02	0.98	40	7	0.00
21	2097	0	2097	0.63	0.88	0.02	1.02	40	15	0.00
22	2066	0	2066	0.65				39		0.00
23	2134	0	2134	0.66	0.92	0.02	1.01	40	40	0.00
24	2152	0	2152	0.73	0.85	0.02	1.06	40	32	0.00
25	2114	0	2114	0.78	0.78	0.02	1.08	39	30	0.00
26	2046	0	2046	0.84	0.82	0.02	1.07	39	38	0.00
27	1916	0	1916	0.84	0.84	0.02	1.06	39	40	0.00
28	1860	0	1860	0.84	0.85	0.02	1.08	40		0.00
29	1957	0	1957	0.82				39		0.00
30	2067	0	2067	0.85	0.86	0.02	1.07	39	33	0.00
31	1961	0	1961	0.81	0.88	0.02	1.09	40	45	0.00
Sum:	**61176**	**0**	**61176**							**0.00**
Avg:	**1973**	**0**	**1973**	**0.78**	**0.87**	**0.02**	**1.05**	**41**	**33**	**0.00**
Max:	**2152**	**0**	**2152**	**0.93**	**0.94**	**0.03**	**1.11**	**44**	**48**	**0.00**
Min:	**1726**	**0**	**1726**	**0.63**	**0.78**	**0.02**	**0.98**	**39**	**7**	**0.00**

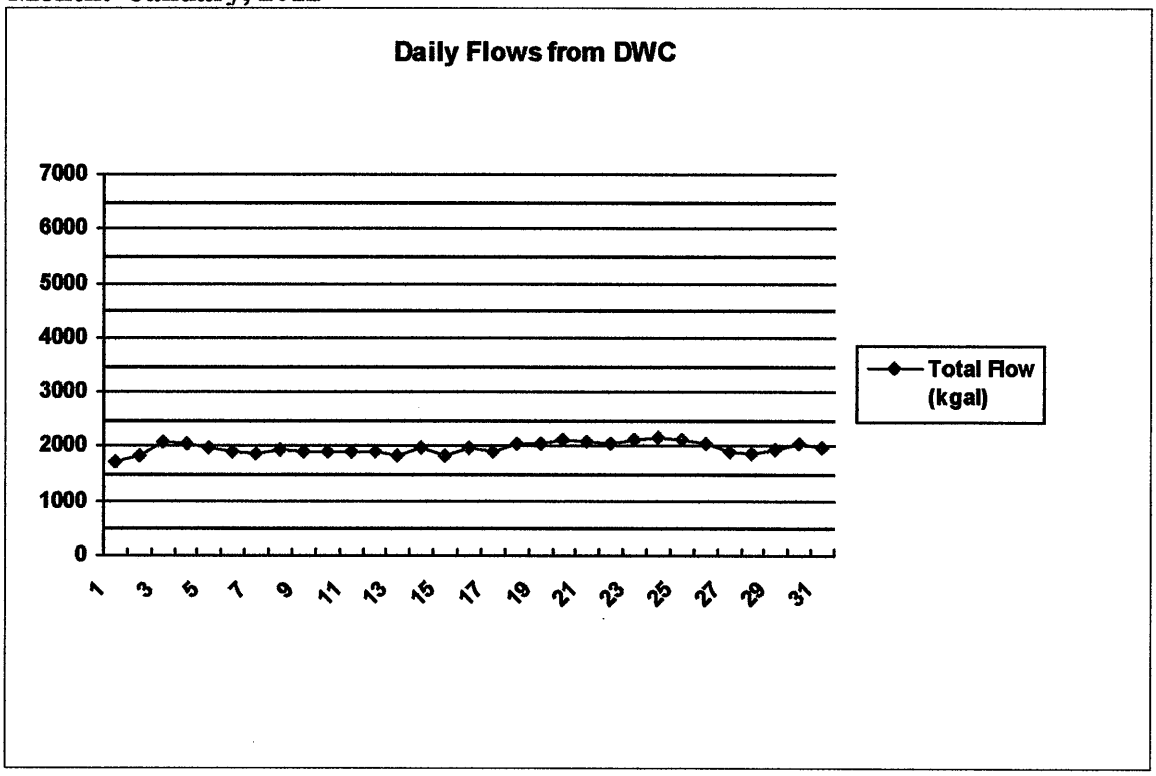
VILLAGE OF HINSDALE, PLANT REPORT

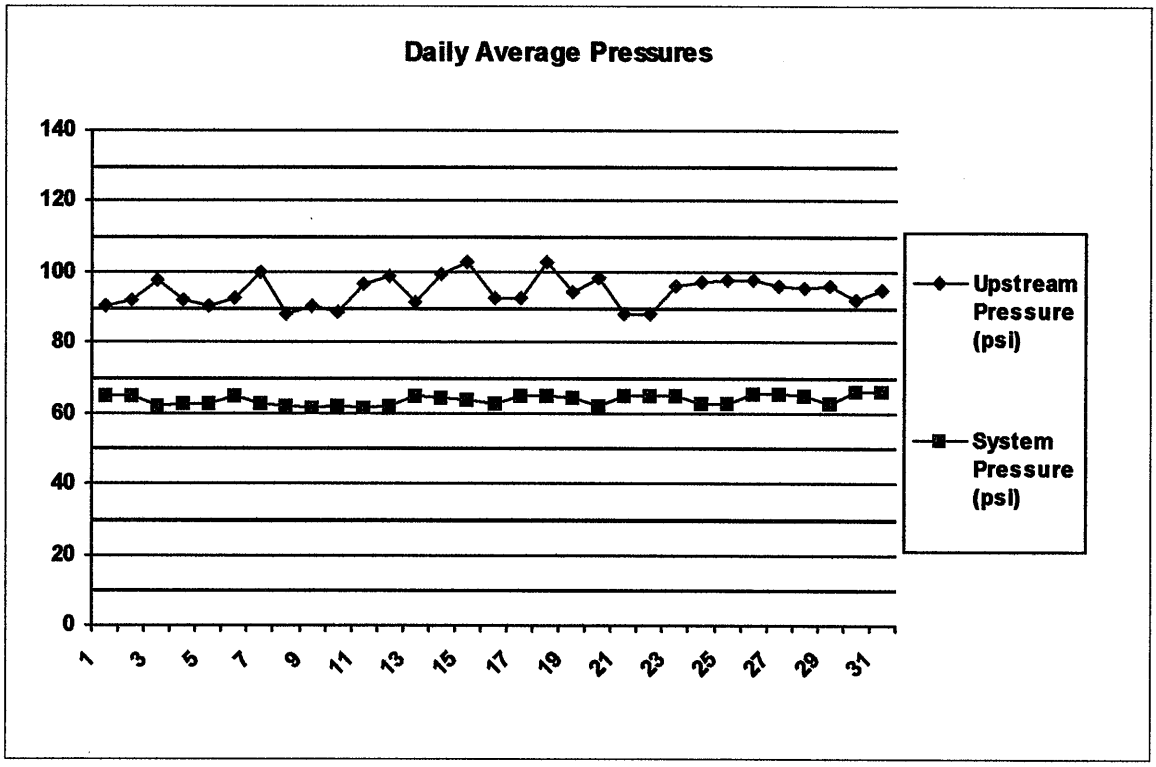
Month: January, 2012

Day	Flow	Tank Levels			Pressures		Pump Run Times		
	Total (kgal)	Standpipe (ft)	Clearwell (ft)	GSR (ft)	Upstream (psi)	System (psi)	HSP1 (hr)	HSP2 (hr)	HSP3 (hr)
1	1726	91.2	9.7	16.7	92.9	63.8	0.0	0.0	3.4
2	1844	90.4	9.5	16.6	94.8	63.7	0.0	0.0	5.5
3	2080	90.9	8.9	16.0	92.3	64.0	0.0	0.0	5.2
4	2060	90.8	9.4	16.4	93.6	63.9	0.0	0.0	4.9
5	1964	90.7	9.4	16.5	93.2	63.8	0.0	0.0	4.6
6	1900	91.2	9.5	16.6	93.5	64.0	0.0	0.0	4.5
7	1867	91.0	9.5	16.6	93.9	63.9	0.0	0.0	4.8
8	1939	91.3	9.6	16.7	93.8	64.1	0.0	0.0	4.3
9	1907	90.7	9.5	16.6	93.6	63.8	0.0	0.0	4.9
10	1920	91.0	9.5	16.6	93.3	63.9	0.0	0.0	4.4
11	1921	91.2	9.6	16.6	95.5	63.9	0.0	0.0	4.2
12	1907	91.1	9.6	16.7	94.4	63.9	0.0	0.0	4.3
13	1848	90.8	9.3	16.4	94.5	63.8	0.0	0.0	5.3
14	1977	90.9	9.3	16.4	93.2	64.0	0.0	0.0	5.1
15	1848	90.5	9.4	16.5	93.7	63.6	0.0	0.0	4.4
16	1964	90.9	9.2	16.3	95.5	63.9	0.0	0.0	5.2
17	1899	90.5	9.4	16.5	93.8	63.7	0.0	0.0	5.2
18	2070	90.6	9.4	16.5	93.1	63.8	0.0	0.0	4.4
19	2041	90.5	9.3	16.4	93.3	63.7	0.0	0.0	4.9
20	2124	90.7	9.1	16.3	93.4	63.8	0.0	0.0	5.5
21	2097	90.8	9.3	16.4	92.8	63.9	0.0	0.0	5.0
22	2066	90.8	9.4	16.5	93.9	63.8	0.0	0.0	5.1
23	2134	90.4	9.3	16.4	92.9	63.7	0.0	0.0	5.0
24	2152	90.8	9.4	16.5	92.9	63.9	0.0	0.0	4.5
25	2114	91.0	9.4	16.5	92.5	63.9	0.0	0.0	4.7
26	2046	90.9	9.4	16.5	93.1	63.9	0.0	0.0	4.7
27	1916	90.7	9.4	16.5	92.3	63.7	0.0	0.0	5.4
28	1860	91.1	9.4	16.6	93.7	64.0	0.0	0.0	5.5
29	1957	90.8	9.3	16.5	94.1	63.9	0.0	0.0	5.1
30	2067	90.8	9.1	16.2	93.6	64.0	0.0	0.0	6.3
31	1961	90.8	9.2	16.3	92.2	63.8	0.0	0.0	4.6
Sum:	**61176**						**0.0**	**0.0**	**150.9**
Avg:	**1973**	**90.8**	**9.4**	**16.5**	**93.5**	**63.9**	**0.0**	**0.0**	**4.9**
Max:	**2152**	**91.3**	**9.7**	**16.7**	**95.5**	**64.1**	**0.0**	**0.0**	**6.3**
Min:	**1726**	**90.4**	**8.9**	**16.0**	**92.2**	**63.6**	**0.0**	**0.0**	**3.4**

VILLAGE OF HINSDALE, SYSTEM TRENDS

Month: January, 2012





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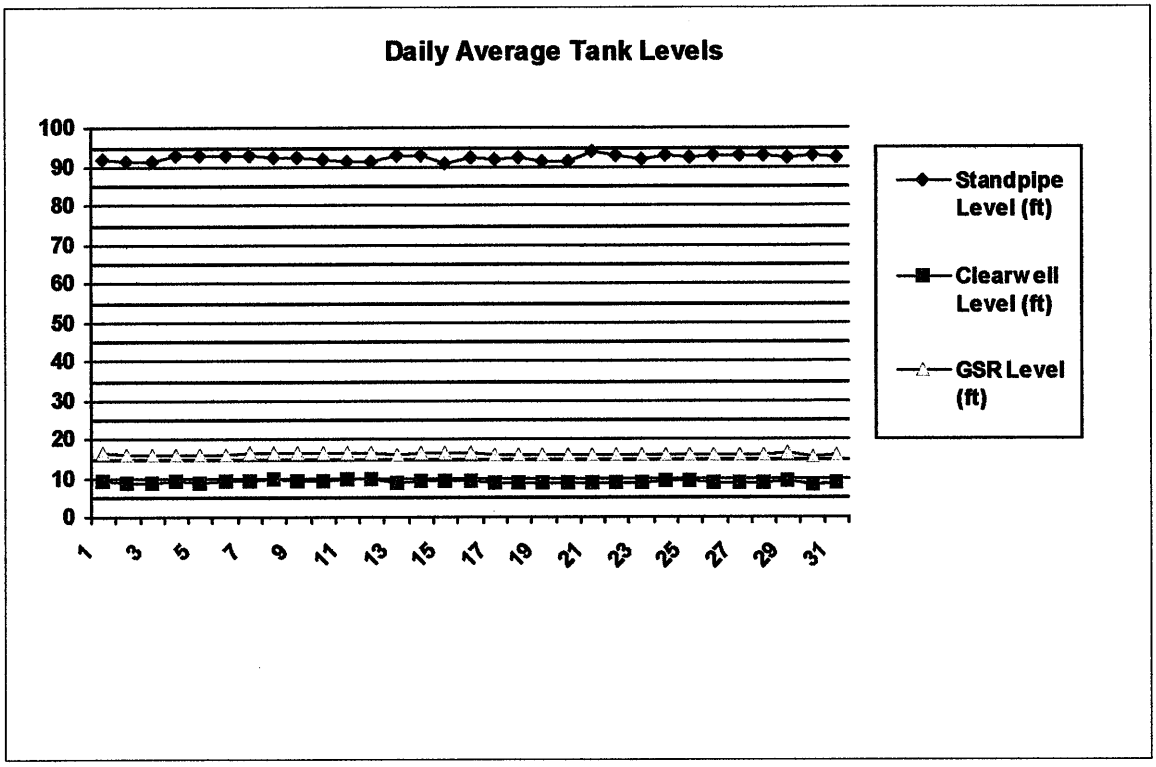
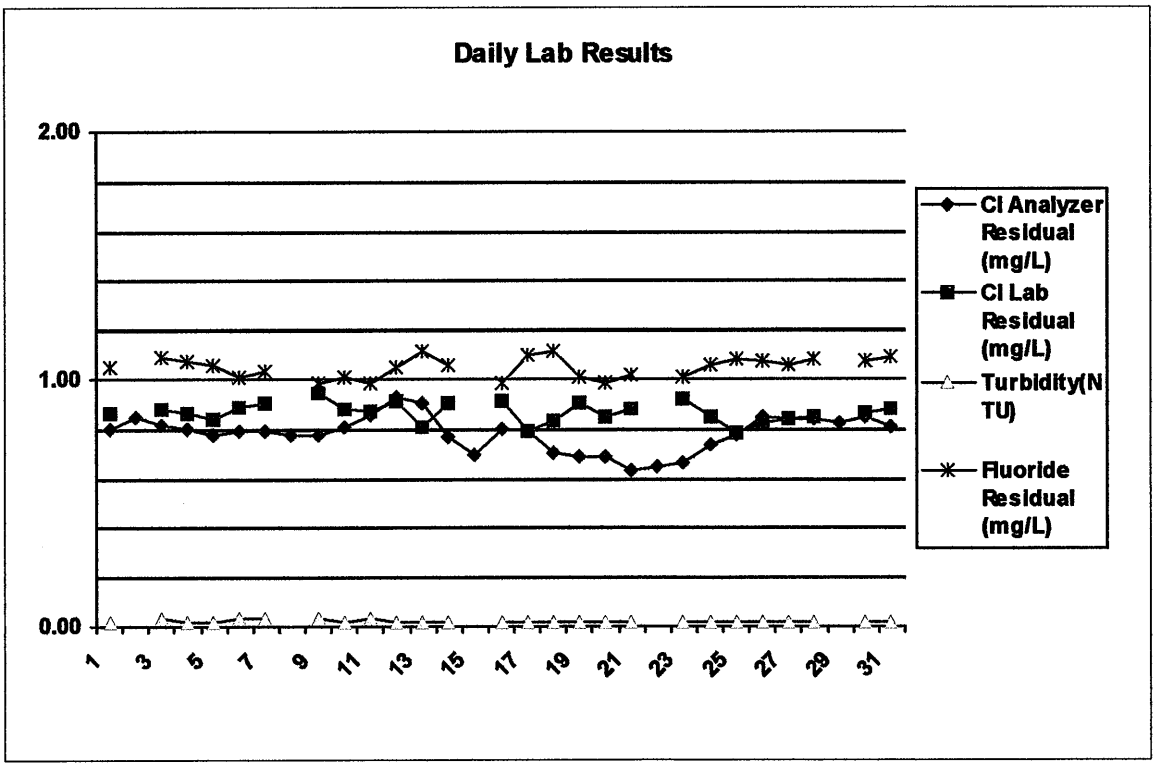
VILLAGE OF HINSDALE, SYSTEM TRENDS

Month: January, 2012





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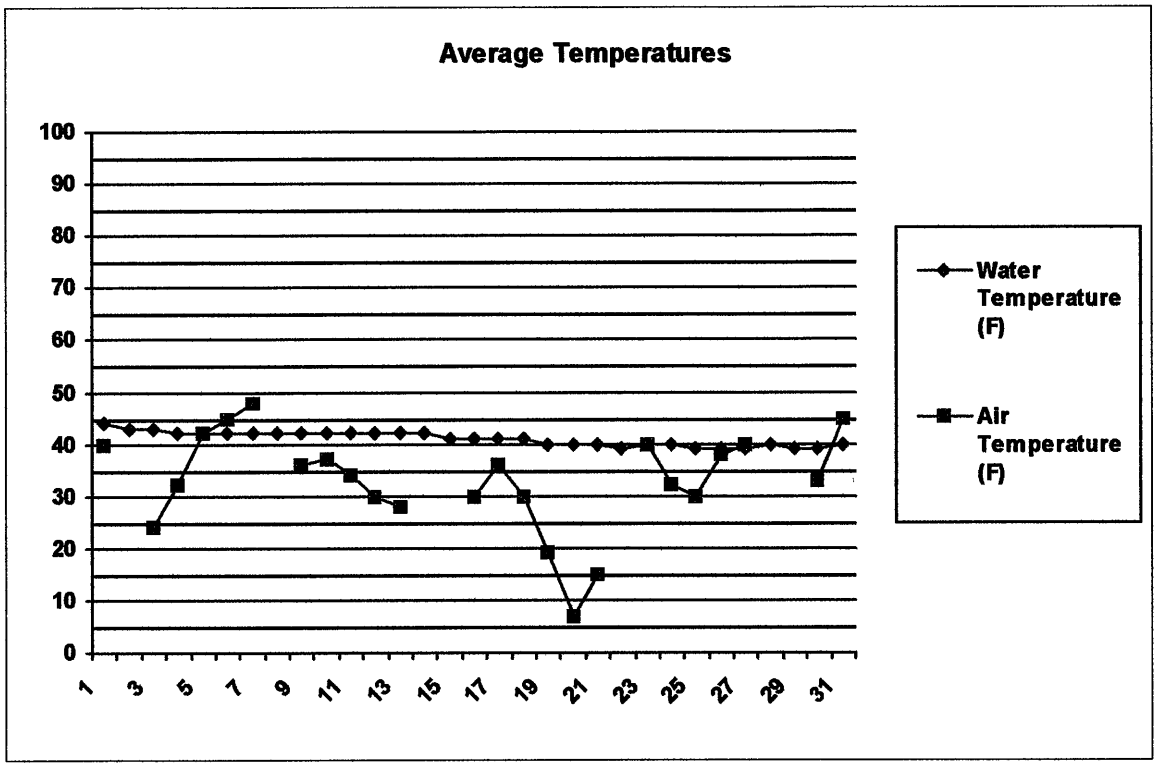
VILLAGE OF HINSDALE, SYSTEM TRENDS

Month: January, 2012



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High Service and Well Pump Maintenance

January 2012

High Service Pump Motors

High Service Pump Motor #1- Check oil and lubricate grease fittings

High Service Pump Motor #2- Check oil and lubricate grease fittings

High Service Pump Motor #3- Check oil and lubricate grease fittings

High Service Pump Motor #4- Check oil and lubricate grease fittings

Well Pump Motors

Well #2 Pump Motor- Check oil, grease fittings, ran for Bacteria and Special Well Testing.

Well #5 Pump Motor- Check oil, grease fittings, ran for Bacteria and Special Well Testing.

Well #8 Pump Motor- Check oil, grease fittings, ran for Bacteria and Special Well Testing.

Well #10 Pump Motor- Check oil, grease fittings, ran for Bacteria and Special Well Testing.

MONTHLY REPORT FOR January, 2012

# of Bacteria samples	25
# of field chlorine	21
# of field turbidities	21
# of lab chlorine	26
# of lab turbidities	26
# of lab pH	26
# of lab fluoride	26
# of precipitation readings	0
# of temperature readings(air)	24
# of temperature readings(water)	31
# of DBP samples	0
# of Pumps serviced	8
# of Special Well Samples	61

MEMORANDUM

TO: CHAIRMAN LAPLACA AND THE EPS COMMITTEE

FROM: GEORGE FRANCO, DIRECTOR OF PUBLIC SERVICES

SUBJECT: PROPOSED PARKWAY TREE REMOVAL AT 105 NORTH VINE ST.

DATE: FEBRUARY 6, 2012

Mr. and Mrs. Gregory Karczewski, the homeowners at 105 N. Vine Street, have requested permission to remove a tree located in the Vine St. right-of-way. The request to remove the tree is due to the location of a new driveway in the proposed new garage construction.

The tree is a Tulip tree that has a 24.0" trunk diameter at 4.5' above grade. The tree has an estimated height of 65' and the canopy has an estimated spread of 30'. The tree's condition is good. The tree has good symmetry in the canopy. There are no significant visible structural defects in the trunk, or scaffold branches. There is a red oak tree located 15' north of and a sweet gum located 15' south of the tree.

Mr. and Mrs. Gregory Karczewski are requesting the EPS committee per their function as the Village's "Tree Board" to allow the removal of this tree. Their letter and additional information is included in this packet. Staff is requesting direction from the Committee in responding to this request.

Mr. & Mrs. Gregory Karczewski
105 North Vine Street
Hinsdale, IL
60521

February 1, 2011

Mr. George Franco
Director of Public Services
Village of Hinsdale
333 South Green Street
Hinsdale, IL 60521

Re: **Request for Tree Removal**
105 North Vine Street

Dear Mr. Franco,

My wife, Melissa, and I moved into Hinsdale earlier this year and purchased the 1930s home at 105 N Vine Street. We enjoy our home and the community and hope to be here for many years to come. I am hereby requesting permission from the Village of Hinsdale to remove a tree near our home in order to facilitate the demolition of our old garage and the construction of a new garage in a slightly different location on our lot (see the attached concept plan, Exhibit A). Moving the garage will significantly improve the safety and functionality of our home.

Replace outdated, aging garage to improve its functionality and safety. Our existing garage is very old, undersized and experienced routine flooding during this past summer's rainfall. The width of the garage door openings barely accommodates a modern vehicle and the depth of the garage allows us to store a vehicle but offers little room for storage or a walkway. Additionally, the garage floor slab is cracked which allows water to enter during rainfall events and soak the garage contents. For these reasons, we would like to construct a new garage that resolves these functional challenges.

As we started to evaluate locations for the new garage, we discovered that relocating the garage to the north end of our lot has several safety and functional benefits:

- Mitigate steep driveway safety concerns. The existing garage driveway slope is very steep. During icy winter conditions, the slippery driveway is a vehicular and pedestrian danger – guests park on the street instead of navigating the icy drive. The proposed garage location will allow for a milder driveway slope and will considerably reduce this safety issue.

- Allow safer ingress/egress from driveway. The existing garage driveway will be moved approximately thirty feet (35) further away from the intersection of Maple Street and Vine Street. Moving the driveway further from the intersection provides additional sight distance to the nearby, busy intersection which will enable safer ingress and egress from our driveway.

- Improve safety and functionality of child play area. We are a young family and we want to see our child when he plays in our backyard. The current backyard space is essentially unusable, north of the home and behind the garage. The yard is not visible from inside the house. The new configuration opens up a play area in the yard immediately adjacent to and visible from the northern house windows - a much safer and more functional condition.

The new garage location will honor the rear, side and front yard setback requirements of the Village of Hinsdale zoning ordinance. Mr. Ryan's informal, preliminary review of our concept plan suggests that we are in accordance with the zoning requirements. Also, after driving around town and observing other corner lots, it appears that there is precedent for other corner lots with garages that are located at the rear of the lot.

Like any renovation project, our plan requires modification of some of the existing conditions. In order to relocate the garage, an existing tree needs to be removed (see the concept driveway plan, Exhibit B). In most instances, a tree in this location would be located on private property. The tree is not in the traditional parkway between the sidewalk and the public curb but is actually three (3) to four (4) feet on the lot side of the sidewalk. However, for unknown reasons, the property line for our lot is setback approximately six (6) feet from the sidewalk and as a result, the tree is within the public right-of-way.

The tree is mature but has been trimmed over the years to avoid interference with the adjacent overhead utility lines. As a result, the canopy is unbalanced. The tree is also located in close proximity to a younger, quality oak tree that will have more opportunity for growth once the subject tree is removed.

To offset the removal of the tree, we plan to make additional landscape improvements to our yard including planting a new tree within the right-of-way and adding additional landscaping to the yard area north of our house (see attached concept landscape plan, Exhibit C). The proposed placement of the new tree creates nice, uniform spacing between the right-of-way trees that didn't previously exist. This will improve the aesthetic appeal of our lot and will have positive impact on the landscape character of the neighborhood.

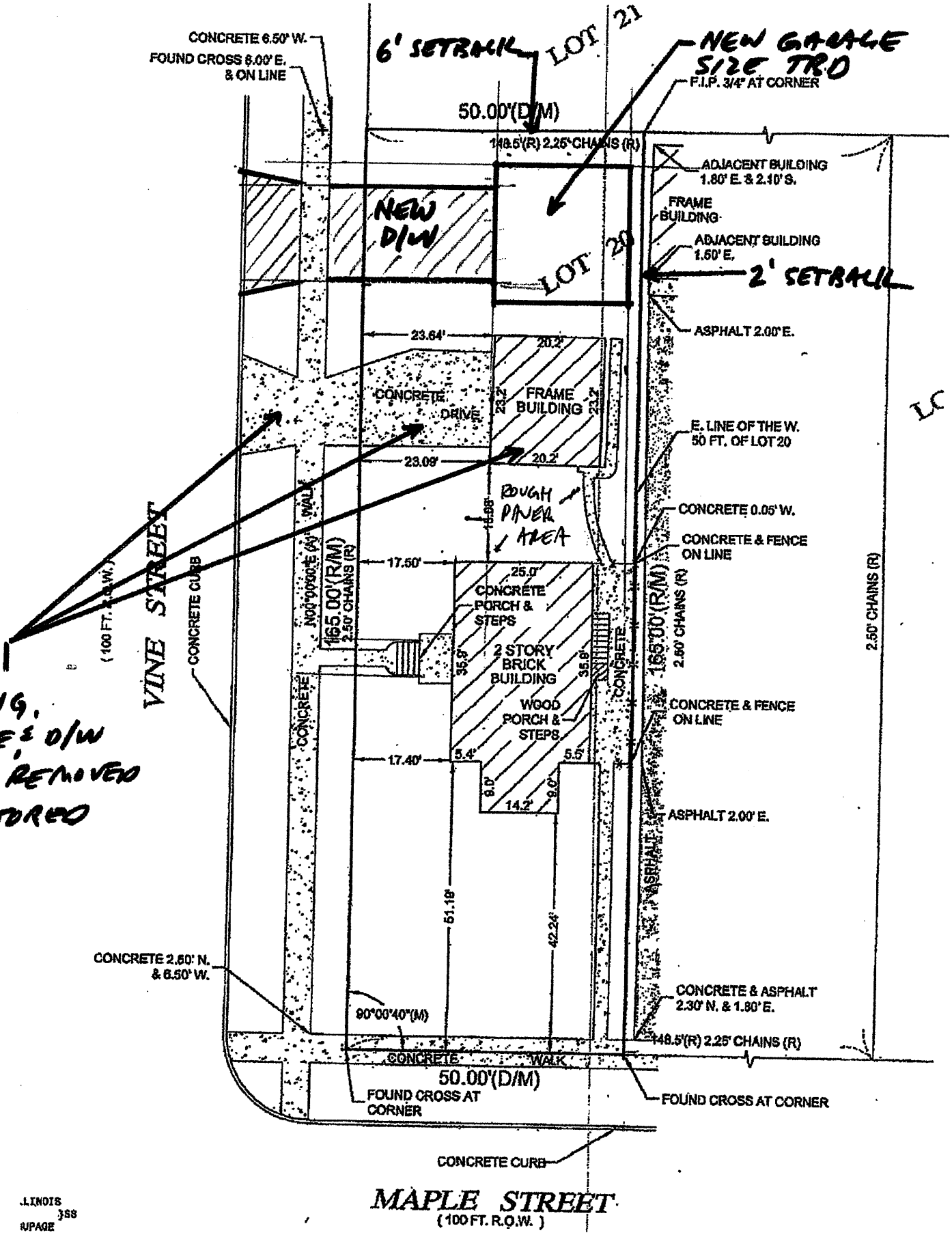
In summary, we believe the net effect of the proposed project will be positive from a landscape, functional and a health, safety and welfare perspective and we would appreciate your approval to remove the tree so we can proceed with our plan.

Thank you for your consideration of this request. If you require any additional information or have any questions, I can be reached at (312) 342-1115.

Regards,

The Karczewski Family
Greg, Melissa and Clayton

EXHIBIT A: CONCEPT GARAGE RELOCATION PLAN
105 N VINE ST.



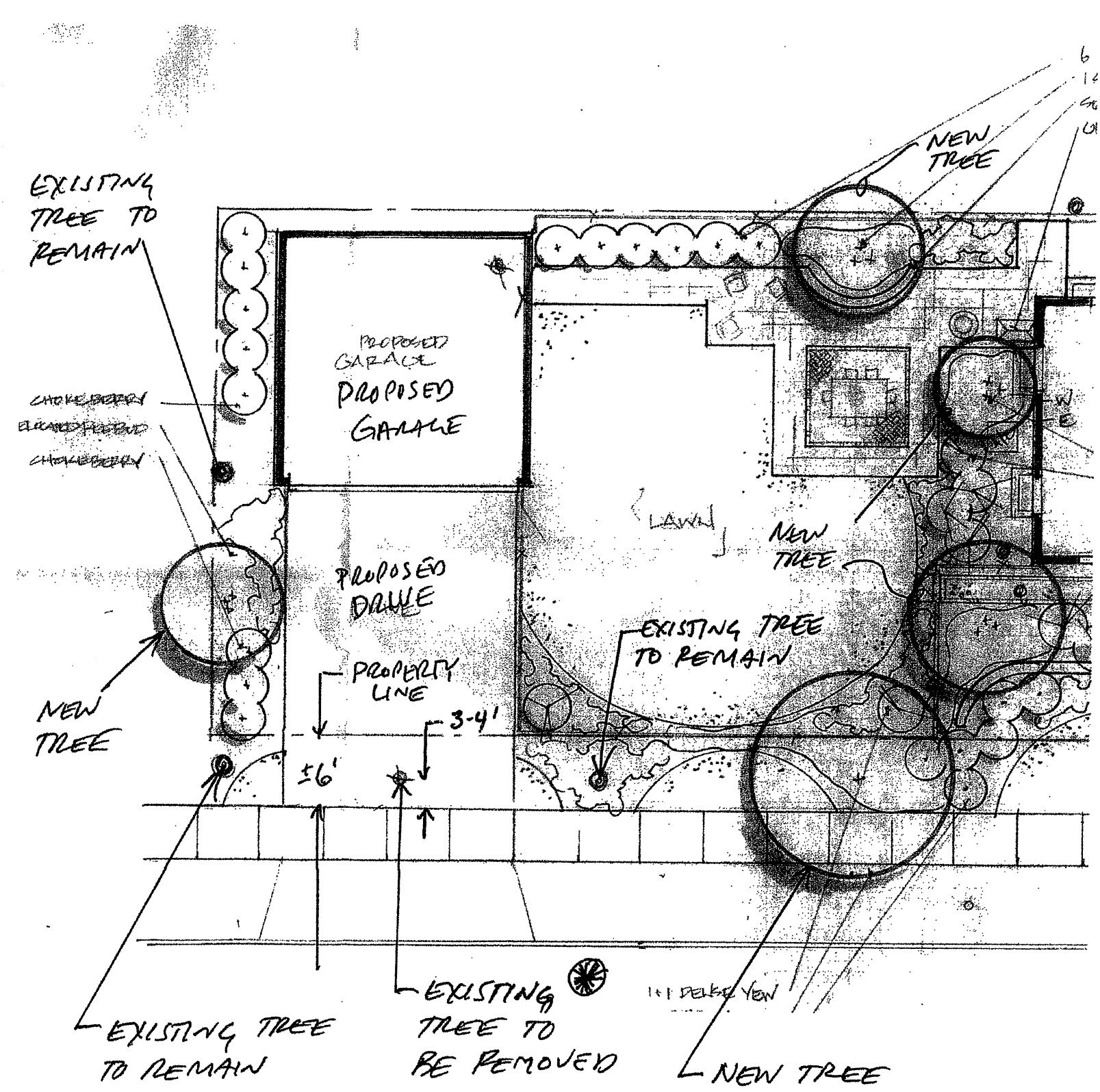
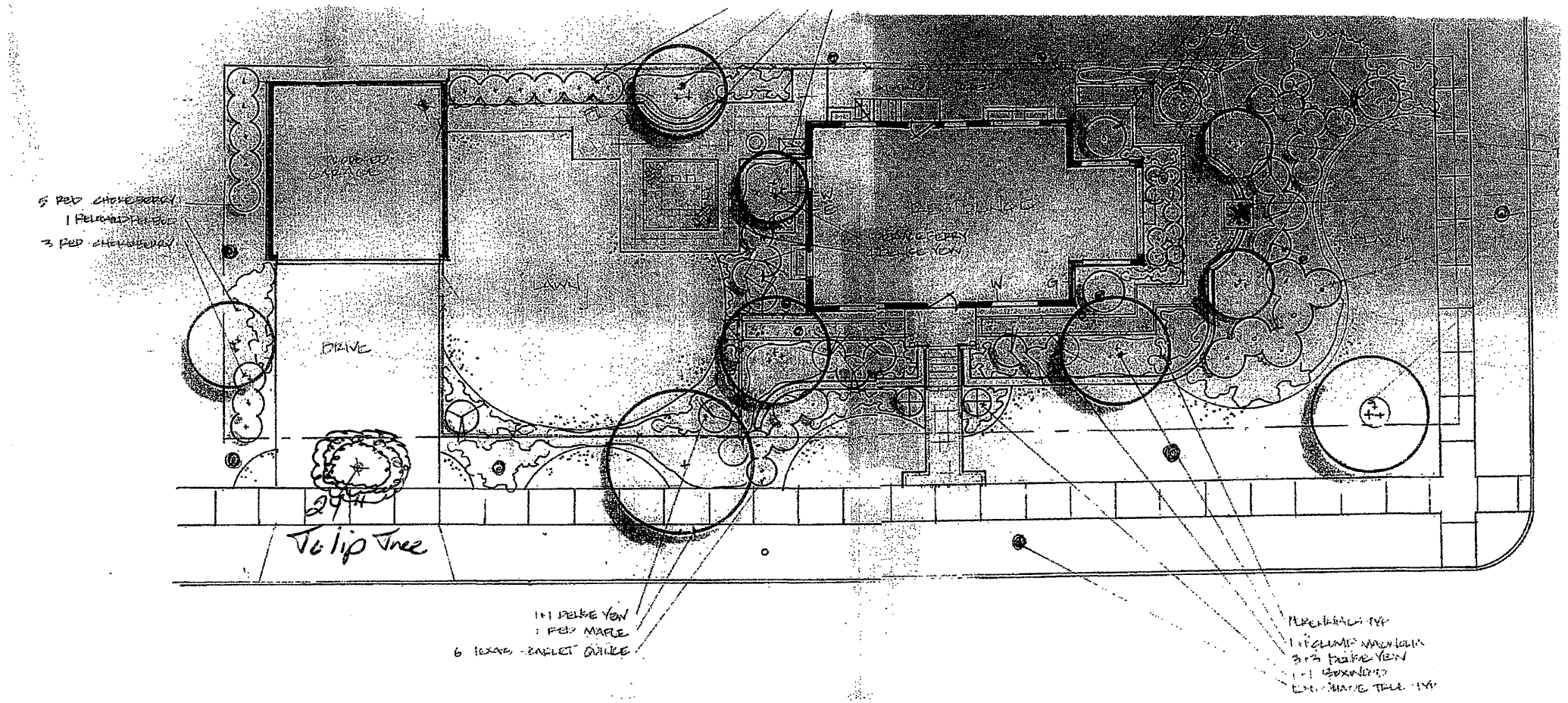


EXHIBIT B: DRIVEWAY CONCEPT PLAN
105 N VINE ST.

EXHIBIT C: CONCEPT LANDSCAPE PLAN
105 N VINE ST.



MEMORANDUM

TO: Chairman LaPlaca & EPS Committee

FROM: Dan Hopkins

DATE: December 14, 2011

RE: IPM Compliance 2011-2012

In accordance with the November 21, 1995, resolution that formalized the Integrated Pest Management Policy of the Village of Hinsdale, the following is the required annual report from the Pest Management Coordinator of compliance with this policy. Attached are tables that illustrate the Village's activities this year. The specifics of these activities are below:

1. Turf Maintenance

Grounds maintenance contracts went into effect May 1, 2011 incorporating the fertilizing and weed control procedures recommended by Dr. Fermanian in 1999 and reviewed in subsequent annual review meetings. The contract established unit prices for fertilizer and weed control.

Attached are tables that describe the locations at which fertilizing and weed control took place. There were two rounds of fertilizing and one round of weed control during the 2011 season. The areas covered by these activities are summarized.

Staff has developed quantitative and qualitative records to evaluate the performance of the turf maintenance activities. Staff visits each public grounds site and evaluates each space for turf density, weed content, and overall appearance. Each area was rated one through five with one being poor and five being excellent. Three rounds of visits were made this year. Appendix 1 describes the rating techniques.

As a result of the 1998 IPM annual meeting, the Committee established goals for the conditions of each turf use. Comparison with the established goals allows the Pest Management Coordinator to track the results of the Village's efforts. The trend is stable in all turf classes. Attached are a summary and tables.

Staff continued using the Aera-vator (aerator) that was purchased in 2008. This machine shakes solid tines 4 to 4.5 inches into the soil to alleviate compaction. The aerator also has a seed box attachment that allows the operator to spread grass seed while aerating athletic fields. Over 1,400 lbs. of grass seed was spread during the 2011 season, and the initial results have been very promising. Areas that received

testing, aerating, overseeding, and the use of corn gluten meal and Burn Out II. In August 2009, weed levels were on the rise at Melin Park, so Staff incorporated some of the steps outlined by Mr. Osbourne to the area. By June 2010 the turf density had improved dramatically and the weed levels lowered significantly.

As suggested by Mr. Osbourne, Village staff had soil tests conducted on several Village parks in 2011. Soil tests can tell you the pH, soil texture, amount of N-P-K, iron, and other important elements that are essential for proper plant health. If soil can be brought into a good balance it can greatly reduce or eliminate the need for chemical pesticides and fertilizers. Soil tests were conducted at Highland Park, Stough Park, and Brush Hill. The soil in these parks is in very good health. The phosphorous levels in all tests were adequate, so staff applied a phosphorous-free fertilizer in the spring and fall of 2011. Phosphorous run off can lead to excessive algae growth, which can have a serious impact on Illinois lakes and streams. In 2009, Wisconsin banned the sale and use of lawn fertilizers containing phosphorous.

Staff is investigating a new ice melting product Winter-green. In the past, there has been a problem with salt burn on the turf grass around the Memorial Building. In 2010, staff experimented with urea to try to alleviate this problem, but the nitrogen levels turned out to be too high and burn still occurred. Winter-green is a blend of urea and calcium chloride, which should help reduce or prevent burn. The results will be seen in spring 2012.

In 2009, Melin Park was designated a "Pesticide Free Park". No chemical pesticides were used at Melin Park in 2011. Village residents now have an alternative to areas that may have been treated with chemical pesticides. Staff made signage to inform residents that this area is now pesticide free.

2. Sustainable Landscaping

Staff has been researching the concept of Sustainable Landscaping as an option for some of the BD flower beds. There are varying definitions, but Sustainable Landscaping should include an attractive environment that is in balance with the local climate and requires minimal resource inputs, such as fertilizer, pesticides, gasoline, time, and water. The goal is to create healthy, regenerative landscape that is economically viable. Sustainable landscaping saves money while also saving the environment.

The BD flower beds are currently changed seasonally: spring bulbs, summer annual flowers, and winter greens. The spring bulbs ($6,500) must be changed every year to make room for the summer annual flowers. The summer annual flowers ($8,600) must be watered by staff three times a week and are discarded once they are spent in

the fall. In November winter greens ($1,700) are added to the flower beds and are discarded after the holiday season.

If the staff was allowed to convert some of the BD flower beds to sustainable it would save a great deal of time, money, and resources. Sustainable plants are perennial (return every year), so there is no need to remove the bulbs. If bulbs are left undisturbed they will return every spring. The summer annual flowers would be replaced by perennial flowers, shrubs and ornamental grasses. Once these perennial plants are established there would be little or no need for watering, which could free up staff for other projects. Also, perennial plants can be selected for "winter interest". Plants such as Red Twig Dogwood and Northern Switch Grass have beautiful colors in the winter months, which could reduce or eliminate the need for winter greens.

3. Prairie Maintenance

Staff conducted prescribed prairie burns for Charleston Rd. Aquatic Garden and Jackson St. Prairie in March 2011. Prescribed burns can be a very effective form of weed control and also help to invigorate native plants. As early as June 2011, signs of improvement could be seen at the prairies, and the results have been overwhelmingly positive.

In September 2011, staff began a prairie seed exchange program with Ryan Campbell, a Restoration Ecologist from Fermilab. He provided much needed seed stock for the Charleston Rd. Aquatic Garden in exchange for some of the rare prairie plant seeds found in the Jackson St. Prairie.

Staff continued working with David Crooks who has been involved with the Jackson St. Prairie preservation for many years. He again offered his services and even enlisted the help of the local Boy Scouts to keep this area clean. Staff would like to work with Mr. Crooks to conduct prairie burns in the spring of 2012. Applications for prescribed burn permits have already been approved for 2012.

4. Tree Preservation

In February 2011 Emerald Ash borer (EAB) was confirmed in the Village of Hinsdale. Staff is working with the Illinois Department of Agriculture's Slow the Spread Program to help control these devastating pests. Information regarding these pests is available at the Public Services Department.

In 2011, Hinsdale lost 12 public elms and 26 private elms. A total of 429 elms received fungicide this year. The loss of treated trees is significantly lower than

untreated tree loss. In the Hinsdale 2005 surveys, a large majority of respondents supported treating all public elm trees.

90 trees were planted in the Village in 2011. 58 were planted by the Village, 28 by Village residents (reimbursement program), and 4 as part of the Tribute Tree program. The Beautification Task Force created the Tribute Tree program in November 2009 to help replenish Hinsdale's tree population.

5. Mosquito Abatement

In 2003 the Village initiated a fourth cycle of inspection and treatment and paid for a trap in town to verify West Nile Virus (WNV) presence. In 2006 this trap and County traps tested positive for WNV, which began the village wide adulticiding program.

During 2011 Illinois saw increasing levels of West Nile Virus (WNV). There were 34 human cases in Illinois. There were 22 case reported in Cook County and 2 cases in Dupage County.

6. Recommendations

Turf

a. Continue with grounds maintenance contracts for mowing and fertilizing.
b. Continue using corn gluten meal and Burn Out II as non-toxic herbicides.
c. Continue going to natural lawn care classes to keep abreast of new and innovative methods to help reduce our need of chemical pesticides.
d. Staff would like to continue soil testing on all major green spaces.
e. Staff does not recommend using any chemical pesticides to treat weeds in the spring of 2012. As of November 2011 turf conditions in most of the Village green spaces exceeded the action threshold. Meaning most of the turf in the Village is in good to excellent condition.
f. Staff would like to use the money for the spring 2012 pesticide treatment to buy more turf grass seed. Staff feels the overseeding done in spring and fall of 2011 has had outstanding results.
g. Approve the use of TriPower chemical pesticide fall 2012 (if necessary).

Sustainable Landscaping

a. Allow staff to convert some of the BD flower beds to Sustainable Landscaping.

Prairie Maintenance

a. Allow staff to conduct prescribed burns for Charleston Rd. Aquatic Garden and Jackson St. Prairie for spring 2012.

Trees

a. No changes in tree management are recommended.

Mosquito Abatement

a. No changes in mosquito abatement are recommended.

7. Annual Pest Management Review Meeting

The November 1995 ordinance requires an annual review meeting to be held by the Environment and Public Services Committee sometime before the end of February. As the acting Pest Management Coordinator, I ask that any technical or scientific questions regarding the compliance report be submitted in writing, no less than seven days before the IPM Review meeting. It is appropriate that the EPS Committee make a motion to approve the report. Proper notice will be given.

Attached are the following:

IPM Maintenance Schedule
Turf Condition Rating Summary
Grounds Maintenance History
Acreage of Activities History
Elm Tree History
Weather Data
Guide to Natural Turf Management, by Chip Osbourne and Doug Wood
Village Soil Samples
Product Labels and MSDS Pesticide Reports

cc: President and Board of Trustees
Dave Cook
George Franco

Proposed 2012 IPM Maintenance Schedule

January 9th

a. IPM Annual Review Meeting.

March 1st

a. Seek permission to conduct prairie burns.
b. Submit prairie burn notification to a newspaper of general circulation in the Village of Hinsdale.
c. Notify neighboring residents of upcoming prairie burns.

March 15th

a. Conduct prairie burns on Jackson St. and Charleston Road (weather permitting).

April 1st

a. Continue corn gluten meal testing.
   Rate: 50lbs./2500sqft.
   - Treat Melin Park and KLM entrance beds with corn gluten meal.
b. First round of aeration program.
c. Overseed turf areas as needed.
   Rate: 3-4lbs./1000sqft.

May 17th

a. Spring Fertilization Program
   Type: Lesco 32-0-16 (NPK)
   Rate: 0.5lbs. N/1000sqft.

June 1st

a. Elm tree inoculation program.
   Type: Arbortech (EPA Reg 100-892)
   Rate: 12 fl. oz. for each 5 inches of diameter.
b. Mosquito abatement program.
   Type: VectoBac (EPA Reg 73049-38) (granular)
   Rate: 0.25-2qts./acre
   Type: Altosid (EPA Reg 2724-375)
   Rate: 1 briquet/100sqft. up to 2ft. deep of water.
   Type: Anvil (EPA Reg 1021-1688-8329)
   Rate: 1.9 oz/min at 5mph
c. Second round of aeration program.

August 1st

a. Third round of aeration program.
b. Overseed turf areas as needed.
   Rate: 3-4lbs./1000sqft.
c. Add starter fertilizer to seeded areas.
   Type: Lesco 16-20-4 (NPK)
   Rate: Rate: 1lb./1000sqft.
d. Topdress areas with sand.
   - The IPM Manager is working with Parks and Recreation to try to close all athletic fields for the month of August. August has very little sports activity, and it would be a good time to do field maintenance.

September 1st

a. Early fall fertilization program (exclude areas seeded in August).
   Type: 24-0-16 (NPK)
   Rate: 1lb./1000sqft.

November 1

a. Forth round of aeration program.
b. Dormant seed turf areas as needed.
   Type: 25% bluegrass and 75% ryegrass
   Rate: 3-4lbs./1000sqft.
   - Grass seed sown in late fall will remain dormant till soil temperatures reach 50 degrees. Dormant seeding is a good way to ensure seeds germinate at the first available time in the spring.
c. Add starter fertilizer to seeded areas.
   Type: Lesco 16-20-4 (NPK)
   Rate: 1lb./100sqft.
d. Late fall fertilization program (exclude seeded areas).
   Type: Lesco 32-0-16 (NPK)
   Rate: 1.5lbs./1000sqft.

* All dates tentative and subject to change.

Appendix 1 – Rating Turf Areas

Unlike separate plots of farmland whose crops can be weighed and compared, turf areas are evaluated by the way they look, not what they produce. By definition any rating will be subjective. However, horticulturalists and other turfgrass professionals have developed a numerical rating system by which, plots of different grass seed mixes are compared in the National Turf Evaluation Program (NTEP). Several attributes of turf are rated on a 10-point scale then averaged together to create an overall number, which is used in comparisons, of for example, new variations of bluegrass.

Staff took a simplified approach, using only three attributes – turf density, weed content and overall appearance. Each attribute is rated from one (way below average) to 5 (way above average). Each turf area is classified by its use: high visibility, athletic, passive with foot traffic, passive without foot traffic or other.

Since 1996 sub-areas within locations have been identified and rated separately. A composite average equally weighing the three measures is computed next. An overall rating for each turf use is determined multiplying the sum of each place's rating average by its area and dividing by the total area of that turf use.

Here is a simple example of one turf type:

	Density	Weed	Appear.	Average	Area	Avg x Area
Park A	2	2	3	2.3	7 acres	16.1
Park B	3	3	3	3.0	1	3.0
Bldg C	3	4	5	4.0	2	8.0
					10 acres	27.1

Composite rating $\frac{27.1}{10} = 2.71$

Goals based upon the rating system were established in 1999. These are the ideals to which the turf management program strives, but they are also based in reality. Lawns of green carpet are not appropriate everywhere. Next the objectives, the practical gauges by which progress is assessed were set. Neither the goals nor the objectives should change often. Maybe in time, sights can be set higher.

The goals are as follows:

- High visibility areas shall be treated to maintain a well above average rating (4.0).
- Athletic areas shall be treated to maintain an above average rating (3.5).

- Passive areas with foot traffic shall be treated to maintain an above average rating (3.5).

- Passive areas without foot traffic shall be treated to maintain an average rating (3.0).

- Other areas shall be treated as appropriate to their use.

The objectives are based on a three-year basis and are 80% of the goals. They are:

• High visibility	3.2
• Athletic	2.8
• Passive with foot traffic	2.8
• Passive without foot traffic	2.4
• Other	as appropriate

The above numbers represent the action threshold. An action threshold is the point at which an IPM Coordinator should take action to improve the turf quality, by either increasing turf density, decreasing weed population, and/or improving overall appearance. Any area that falls below the action threshold should receive attention to bring the levels up to or above the action threshold. Methods that can help bring levels up to action threshold include: aerating, fertilizing (organic/inorganic), top dressing, overseeding, and weed control (organic/chemical).

Staff has discussed this methodology with its turf consultant, Dr. Fermanian. He thought the approach was reasonable and agreed that a three-year average is a long enough time frame to judge progress. Individual seasons of extreme weather may tilt study lengths of shorter duration.

The object of a turf management program is stability over time. Any activity influenced by weather will see periodic advances and declines. The goals and objectives allow the Village to look past the seasonal battles over turf growth to assess its long-term programmed approach reflected in the IPM policy. An analysis using these tools will reveal long-range trends.

TURF CONDITION RATING 2011

	SITE LOCATION	Apr-11 TURF DENSITY	Apr-11 WEED POPULATION	Apr-11 APPEARANCE	Action Threshold	Rating	Recommendations
	MEMORIAL BUILDING						
HV	NORTH	3	3	3	3.2	3.00	A,F,S,W
HV	SOUTH	3	3	3	3.2	3.00	A,F,S,W
HV	BURLINGTON PARK	3	3	3	3.2	3.00	A,F,S,W
P	SYMONDS DRIVE	2	2	3	2.4	2.33	A,F,S,W
HV	POLICE/FIRE BLDG	3	3	3	2.8	3.00	A,F
	WATER PLANT						
HV	WEST OF PLANT	3	3	3	2.8	3.00	A,F
P	S ALONG SYMONDS	2	2	3	2.4	2.33	A,F,S,W
PF	RESERVOIR	3	3	3	2.8	3.00	A,F
P	PUB WORKS GARAGE	2	2	2	2.4	2.00	A,F,S,W
P	BRUSH HILL	3	3	3	2.4	3.00	A,F
	PEIRCE PARK						
A	FAR EAST FIELDS	3	3	3	2.8	3.00	A,F
A	NEAR EAST FIELDS	3	3	3	2.8	3.00	A,F
PF	PASSIVE AREAS	2	3	3	2.8	2.67	A,F,S
A	WEST FIELD	3	3	3	2.8	3.00	A,F
P	RAVINE & CTY LINE	3	3	3	2.4	3.00	A,F
P	RAVINE & OAK	3	3	3	2.4	3.00	A,F
P	YORK & WALKER	2	1	1	2.4	1.33	A,F,S,W
P	MADISON @ OGDEN	1	1	1	2.4	1.00	A,F,S,W
	BURNS FIELD						
A	ICE RINK	2	3	2	2.8	2.33	A,F,S
A	SOCCER AREA	3	3	3	2.8	3.00	A,F
A	PLAYGROUND	3	2	3	2.8	2.67	A,F,W
PF	FRINGE	2	2	2	2.8	2.00	A,F,S,W
	STOUGH PARK						
A	ICE RINK	3	3	3	2.8	3.00	A,F
O	RAILROAD BANK	3	2	3	n/a	n/a	n/a
PF	EAST PASSIVE	3	3	3	2.8	3.00	A,F
PF	CENTRAL PASSIVE	3	3	3	2.8	3.00	A,F
PF	W HINSDALE STA	2	1	1	2.8	1.33	A,F,S,W
P	JACKSON: 4TH - 8TH	2	3	3	2.4	2.67	A,F,S,W
P	JACKSON PRAIRIE	5	3	5	2.4	4.33	S
A	MELIN PARK	3	3	3	2.8	3.00	A
A	DIETZ PARK	3	3	3	2.8	3.00	A,F,S

= Area has a rating that falls below the Action Threshold. Action should be taken to remedy this.

A = Aerate F = Fertilize S = Seed W = Weed Control

	SITE LOCATION	Apr-11 TURF DENSITY	Apr-11 WEED POPULATION	Apr-11 APPEARANCE	Action Threshold	Rating	Recommendations
	ROBBINS PARK						
A	NE - NORTH	3	2	3	2.8	2.67	A,F,W
A	NE - SOUTH	3	3	3	2.8	3.00	A,F
A	CENTRAL	2	2	3	2.8	2.33	A,F,S,W
A	SOUTHWEST	3	2	3	2.8	2.67	A,F,W
PF	PARKWAYS	3	2	3	2.8	2.67	A,F,W
A	FOOTBALL	2	3	3	2.8	2.67	A,F,S,W
	SWIMMING POOL						
PF	NORTH	2	3	2	2.8	2.33	A,F,S
PF	SOUTH	3	3	3	2.8	3.00	A,F
A	WEST	3	3	3	2.8	3.00	A,F
PF	EHRET PARK	2	2	3	2.8	2.33	A,F,S,W
P	HINS: STOUGH - GARF	2	2	2	2.4	2.00	A,F,S,W
HV	ELEANOR'S PARK	3	3	3	3.2	3.00	A,F,S,W
P	CHICAGO @ BNRR	3	2	3	2.4	2.67	A,F,S,W
	HIGHLAND PARK						
PF	PASSIVE	3	2	3	2.8	2.67	A,F,W
PF	PARKWAYS	3	2	3	2.8	2.67	A,F,W
A	VEECK PARK	2	3	2	2.8	2.33	A,F,S,W
P	CHICAGO @ PRINCE	3	3	3	2.4	3.00	A,F
P	1ST & PRINCETON	3	3	3	2.4	3.00	A,F
P	3RD & PRINCETON	3	2	3	2.4	2.67	A,F
P	COLUMBIA: 1ST - 3RD	2	3	3	2.4	2.67	A,F,S
	BROOK PARK						
A	PLAYING FIELD	3	3	3	2.8	3.00	A,F
PF	FRINGE AREAS	3	3	3	2.8	3.00	A,F,S
PF	6TH & PRINCETON	4	3	3	2.8	3.33	A,F
P	7TH & HARDING	3	3	3	2.4	3.00	A,F
PF	WOODLAND PARK	3	2	3	2.8	2.67	A,F,S
O	TAFT @ 55TH	1	1	1	n/a	n/a	n/a
P	7TH & WILSON	2	3	2	2.4	2.33	A,F,S
O	CLEVELAND @ 55TH	1	1	1	n/a	n/a	n/a
PF	WOODLAND DR ISLES	3	3	3	2.8	3.00	A,F
P	DALEWOOD ISLAND	3	3	3	2.4	3.00	A,F,W
P	COUNTY LINE CT	1	1	1	n/a	n/a	A,F,S,W
O	PAMELA CIRCLE	1	1	1	n/a	n/a	n/a
PF	CHARLESTON RD	3	3	3	2.8	3.00	A,F

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A = Aerate F = Fertilize S = Seed W = Weed Control

	SITE LOCATION	Apr-11			Action Threshold	Rating	Recommendations
		TURF DENSITY	WEED POPULATION	APPEARANCE			
	KLM PARK						
HV	NEAR BUILDINGS	3	2	3	3.2	2.67	A,F,S
HV	CONCERT HILL	4	3	3	3.2	3.33	A,F
A	NORTH OF CREEK	3	2	3	2.8	2.67	A,F,W,S
A	EAST PLAY AREA	3	3	3	2.8	3.00	A,F
PF	SOUTH OF ROAD	2	2	2	2.8	2.00	A,F,S,W
PF	4TH ST ISLANDS	3	3	3	2.8	3.00	A,F
P	OAK @ 9TH	2	2	1	n/a	n/a	n/a
P	ELM ; 9TH - 55TH	3	2	3	2.4	2.67	A,F
PF	WASHINGTON CIRC	3	3	3	2.8	3.00	A,F
O	WASHINGTON LOT	1	1	1	n/a	n/a	n/a
PF	PARKWAYS @ HMS	2	1	1	2.8	1.33	A,F,S,W
O	LINCOLN LOT	1	1	1	n/a	n/a	n/a
O	VILLAGE LOT	1	1	1	n/a	n/a	n/a
O	W OF POST CIRCLE	1	1	1	n/a	n/a	n/a
A	DUNCAN FIELD	2	2	2	2.8	2.00	A,F,S,W

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	SITE LOCATION	Jul-11 TURF DENSITY	Jul-11 WEED POPULATION	Jul-11 APPEARANCE	Action Threshold	Rating	Recommendations
	MEMORIAL BUILDING						
HV	NORTH	2	3	3	3.2	2.67	A,F,S,W
HV	SOUTH	3	3	3	3.2	3.00	A,F,S,W
HV	BURLINGTON PARK	3	2	3	3.2	2.67	A,F,S,W
P	SYMONDS DRIVE	2	3	3	2.4	2.67	A,F,S
HV	POLICE/FIRE BLDG	2	3	3	2.8	2.67	A,F,S
	WATER PLANT						
HV	WEST OF PLANT	3	3	3	2.8	3.00	A,F
P	S ALONG SYMONDS	3	2	3	2.4	2.67	A,F,W
PF	RESERVOIR	3	3	3	2.8	3.00	A,F
P	PUB WORKS GARAGE	2	2	2	2.4	2.00	A,F,S,W
P	BRUSH HILL	3	3	3	2.4	3.00	A,F
	PEIRCE PARK						
A	FAR EAST FIELDS	3	3	3	2.8	3.00	A,F
A	NEAR EAST FIELDS	3	3	3	2.8	3.00	A,F
PF	PASSIVE AREAS	2	3	3	2.8	2.67	A,F,S
A	WEST FIELD	4	3	3	2.8	3.33	A,F
P	RAVINE & CTY LINE	3	3	3	2.4	3.00	A,F
P	RAVINE & OAK	3	3	3	2.4	3.00	A,F
P	YORK & WALKER	1	1	1	2.4	1.00	A,F,S,W
P	MADISON @ OGDEN	1	1	1	2.4	1.00	A,F,S,W
	BURNS FIELD						
A	ICE RINK	3	3	3	2.8	3.00	A,F
A	SOCCER AREA	3	3	3	2.8	3.00	A,F
A	PLAYGROUND	2	2	3	2.8	2.33	A,F,S,W
PF	FRINGE	2	2	2	2.8	2.00	A,F,S,W
	STOUGH PARK						
A	ICE RINK	3	3	3	2.8	3.00	A,F
O	RAILROAD BANK	3	3	3	n/a	n/a	n/a
PF	EAST PASSIVE	3	3	3	2.8	3.00	A,F
PF	CENTRAL PASSIVE	3	3	3	2.8	3.00	A,F
PF	W HINSDALE STA	2	2	2	2.8	2.00	A,F,S,W
P	JACKSON: 4TH - 8TH	2	3	3	2.4	2.67	A,F,S,W
P	JACKSON PRAIRIE	5	3	5	2.4	4.33	S
A	MELIN PARK	3	3	3	2.8	3.00	A
A	DIETZ PARK	2	3	3	2.8	2.67	A,F,S

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A = Aerate F = Fertilize S = Seed W = Weed Control

	SITE LOCATION	Jul-11 TURF DENSITY	Jul-11 WEED POPULATION	Jul-11 APPEARANCE	Action Threshold	Rating	Recommendations
	ROBBINS PARK						
A	NE - NORTH	3	2	3	2.8	2.67	A,F,W
A	NE - SOUTH	3	2	3	2.8	2.67	A,F,W
A	CENTRAL	2	2	3	2.8	2.33	A,F,W,S
A	SOUTHWEST	3	2	3	2.8	2.67	A,F,W
PF	PARKWAYS	3	2	3	2.8	2.67	A,F,W
A	FOOTBALL	2	2	3	2.8	2.33	A,F,W,S
	SWIMMING POOL						
PF	NORTH	2	3	2	2.8	2.33	A,F,S
PF	SOUTH	3	3	3	2.8	3.00	A,F
A	WEST	3	3	3	2.8	3.00	A,F
PF	EHRET PARK	3	2	3	2.8	2.67	A,F,W
P	HINS: STOUGH - GARF	2	2	2	2.4	2.00	A,F,S,W
HV	ELEANOR'S PARK	4	3	3	3.2	3.33	A,F
P	CHICAGO @ BNRR	2	3	3	2.4	2.67	A,F,W
	HIGHLAND PARK						
PF	PASSIVE	3	2	3	2.8	2.67	A,F,W
PF	PARKWAYS	3	2	3	2.8	2.67	A,F,W
A	VEECK PARK	2	3	2	2.8	2.33	A,F,S
P	CHICAGO @ PRINCE	2	2	3	2.4	2.33	A,F,S,W
P	1ST & PRINCETON	3	3	3	2.4	3.00	A,F
P	3RD & PRINCETON	2	2	3	2.4	2.33	A,F,S,W
P	COLUMBIA: 1ST - 3RD	2	2	3	2.4	2.33	A,F,S,W
	BROOK PARK						
A	PLAYING FIELD	3	3	3	2.8	3.00	A,F
PF	FRINGE AREAS	3	3	3	2.8	3.00	A,F,S
PF	6TH & PRINCETON	3	3	3	2.8	3.00	A,F
P	7TH & HARDING	3	3	3	2.4	3.00	A,F
PF	WOODLAND PARK	3	2	3	2.8	2.67	A,F,W
O	TAFT @ 55TH	1	1	1	n/a	n/a	n/a
P	7TH & WILSON	2	3	2	2.4	2.33	A,F,S
O	CLEVELAND @ 55TH	1	1	1	n/a	n/a	n/a
PF	WOODLAND DR ISLES	3	3	3	2.8	3.00	A,F
P	DALEWOOD ISLAND	3	3	3	2.4	3.00	A,F,W
P	COUNTY LINE CT	1	1	1	n/a	n/a	A,F,S,W
O	PAMELA CIRCLE	1	1	1	n/a	n/a	n/a
PF	CHARLESTON RD	3	3	3	2.8	3.00	A,F

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	SITE LOCATION	Jul-11 TURF DENSITY	Jul-11 WEED POPULATION	Jul-11 APPEARANCE	Action Threshold	Rating	Recommendations
	KLM PARK						
HV	NEAR BUILDINGS	3	2	3	3.2	2.67	A,F,W
HV	CONCERT HILL	3	2	3	3.2	2.67	A,F,W
A	NORTH OF CREEK	3	2	3	2.8	2.67	A,F,W
A	EAST PLAY AREA	2	2	3	2.8	2.33	A,F,S,W
PF	SOUTH OF ROAD	2	2	2	2.8	2.00	A,F,S,W
PF	4TH ST ISLANDS	3	3	3	2.8	3.00	A,F
P	OAK @ 9TH	2	2	1	n/a	n/a	n/a
P	ELM ; 9TH - 55TH	3	2	3	2.4	2.67	A,F
PF	WASHINGTON CIRC	3	3	3	2.8	3.00	A,F
O	WASHINGTON LOT	1	1	1	n/a	n/a	n/a
PF	PARKWAYS @ HMS	2	1	1	2.8	1.33	A,F,S,W
O	LINCOLN LOT	1	1	1	n/a	n/a	n/a
O	VILLAGE LOT	1	1	1	n/a	n/a	n/a
O	W OF POST CIRCLE	1	1	1	n/a	n/a	n/a
A	DUNCAN FIELD	2	2	2	2.8	2.00	A,F,S,W

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	SITE LOCATION	Nov-11 TURF DENSITY	Nov-11 WEED POPULATION	Nov-11 APPEARANCE	Action Threshold	Rating	Recommendations
	MEMORIAL BUILDING						
HV	NORTH	3	3	3	3.2	3.00	A,F,S
HV	SOUTH	4	3	3	3.2	3.33	A,F
HV	BURLINGTON PARK	3	3	3	3.2	3.00	A,F,S
P	SYMONDS DRIVE	2	3	3	2.4	2.67	A,F,S
HV	POLICE/FIRE BLDG	3	3	3	2.8	3.00	A,F
	WATER PLANT						
HV	WEST OF PLANT	3	3	3	2.8	3.00	A,F
P	S ALONG SYMONDS	3	2	3	2.4	2.67	A,F,W
PF	RESERVOIR	3	3	3	2.8	3.00	A,F
P	PUB WORKS GARAGE	3	2	2	2.4	2.33	A,F,S,W
P	BRUSH HILL	3	3	3	2.4	3.00	A,F
	PEIRCE PARK						
A	FAR EAST FIELDS	3	3	3	2.8	3.00	A,F
A	NEAR EAST FIELDS	3	3	3	2.8	3.00	A,F
PF	PASSIVE AREAS	3	3	3	2.8	3.00	A,F
A	WEST FIELD	3	3	3	2.8	3.00	A,F
P	RAVINE & CTY LINE	3	3	3	2.4	3.00	A,F
P	RAVINE & OAK	3	3	3	2.4	3.00	A,F
P	YORK & WALKER	1	1	1	2.4	1.00	A,F,S,W
P	MADISON @ OGDEN	1	1	1	2.4	1.00	A,F,S,W
	BURNS FIELD						
A	ICE RINK	3	2	2	2.8	2.33	A,F,W,S
A	SOCCER AREA	3	3	3	2.8	3.00	A,F
A	PLAYGROUND	3	2	3	2.8	2.67	A,F,W
PF	FRINGE	2	2	2	2.8	2.00	A,F
	STOUGH PARK						
A	ICE RINK	3	3	3	2.8	3.00	A,F
O	RAILROAD BANK	3	3	3	n/a	n/a	n/a
PF	EAST PASSIVE	3	3	3	2.8	3.00	A,F
PF	CENTRAL PASSIVE	3	3	3	2.8	3.00	A,F
PF	W HINSDALE STA	2	2	2	2.8	2.00	A,F,S,W
P	JACKSON: 4TH - 8TH	2	3	3	2.4	2.67	A,F,S
P	JACKSON PRAIRIE	5	3	4	2.4	4.00	S
A	MELIN PARK	3	3	3	2.8	3.00	A
A	DIETZ PARK	3	3	3	2.8	3.00	A,F

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	SITE LOCATION	Nov-11 TURF DENSITY	Nov-11 WEED POPULATION	Nov-11 APPEARANCE	Action Threshold	Rating	Recommendations
	ROBBINS PARK						
A	NE - NORTH	4	3	3	2.8	3.33	A,F
A	NE - SOUTH	3	3	3	2.8	3.00	A,F
A	CENTRAL	3	3	3	2.8	3.00	A,F
A	SOUTHWEST	3	3	3	2.8	3.00	A,F
PF	PARKWAYS	3	3	3	2.8	3.00	A,F
A	FOOTBALL	3	3	3	2.8	3.00	A,F
	SWIMMING POOL						
PF	NORTH	3	2	2	2.8	2.33	A,F,S,W
PF	SOUTH	3	2	3	2.8	2.67	A,F,W
A	WEST	3	2	3	2.8	2.67	A,F,S,W
PF	EHRET PARK	2	3	3	2.8	2.67	A,F,S
P	HINS: STOUGH - GARF	2	2	2	2.4	2.00	A,F,S,W
HV	ELEANOR'S PARK	3	2	3	3.2	2.67	A,F,W
P	CHICAGO @ BNRR	3	3	3	2.4	3.00	A,F
	HIGHLAND PARK						
PF	PASSIVE	3	3	3	2.8	3.00	A,F
PF	PARKWAYS	3	3	3	2.8	3.00	A,F
A	VEECK PARK	2	2	2	2.8	2.00	A,F,S,W
P	CHICAGO @ PRINCE	3	3	3	2.4	3.00	A,F
P	1ST & PRINCETON	3	3	3	2.4	3.00	A,F
P	3RD & PRINCETON	2	2	2	2.4	2.00	A,F,S,W
P	COLUMBIA: 1ST - 3RD	2	2	2	2.4	2.00	A,F,S,W
	BROOK PARK						
A	PLAYING FIELD	3	3	3	2.8	3.00	A,F
PF	FRINGE AREAS	3	3	3	2.8	3.00	A,F,S
PF	6TH & PRINCETON	3	3	3	2.8	3.00	A,F
P	7TH & HARDING	3	3	3	2.4	3.00	A,F
PF	WOODLAND PARK	3	3	3	2.8	3.00	A,F
O	TAFT @ 55TH	1	1	1	n/a	n/a	n/a
P	7TH & WILSON	2	3	2	2.4	2.33	A,F,S
O	CLEVELAND @ 55TH	1	1	1	n/a	n/a	n/a
PF	WOODLAND DR ISLES	3	3	3	2.8	3.00	A,F
P	DALEWOOD ISLAND	3	3	3	2.4	3.00	A,F,W
P	COUNTY LINE CT	1	1	1	n/a	n/a	A,F,S,W
O	PAMELA CIRCLE	1	1	1	n/a	n/a	n/a
PF	CHARLESTON RD	3	3	3	2.8	3.00	A,F

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	SITE LOCATION	Nov-11 TURF DENSITY	Nov-11 WEED POPULATION	Nov-11 APPEARANCE	Action Threshold	Rating	Recommendations
	KLM PARK						
HV	NEAR BUILDINGS	3	3	3	3.2	3.00	A,F,S
HV	CONCERT HILL	4	3	3	3.2	3.33	A,F
A	NORTH OF CREEK	3	3	3	2.8	3.00	A,F,S
A	EAST PLAY AREA	3	3	3	2.8	3.00	A,F
PF	SOUTH OF ROAD	2	3	3	2.8	2.67	A,F,S,W
PF	4TH ST ISLANDS	3	3	3	2.8	3.00	A,F
P	OAK @ 9TH	2	2	1	n/a	n/a	n/a
P	ELM ; 9TH - 55TH	3	2	3	2.4	2.67	A,F
PF	WASHINGTON CIRC	3	3	3	2.8	3.00	A,F
O	WASHINGTON LOT	1	1	1	n/a	n/a	n/a
PF	PARKWAYS @ HMS	2	1	1	2.8	1.33	A,F,S,W
O	LINCOLN LOT	1	1	1	n/a	n/a	n/a
O	VILLAGE LOT	1	1	1	n/a	n/a	n/a
O	W OF POST CIRCLE	1	1	1	n/a	n/a	n/a
A	DUNCAN FIELD	3	2	2	2.8	2.33	A,F,W

= Area has a rating that falls below the Action Threshold. Action should be taken to remedy this.

A = Aerate F = Fertilize S = Seed W = Weed Control

GROUNDS MAINT HISTORY	SPR 2002	FALL 2002	SPR 2003	FALL 2003	SPR 2004	FALL 2004	SPR 2005	FALL 2005	SPR 2006	FALL 2006	SPR 2007	FALL 2007	SPR 2008	FALL 2008	SPR 2009	FALL 2009	SPR 2010	FALL 2010	SPR 2011	FALL 2011
1 MEMORIAL BUILDING																				
NORTH	F	AF	AF	AFWS	AF	F	AF	AF	AF	AF	S	AF	WA	FAS	AFW	AF	AFS	AFWS	AFS	AFWS
SOUTH	F	AF	AF	AF	AF	FWS	AF	AF	AF	AF		AF	WA	FAS	AFWO	AFO	AFOS	AFWS	AFOS	AFWS
2 BURLINGTON PARK	F	AF	AF	const	const	AF	AF	WAFS	AO	AF		AF	WA	FAS	AFW	AF	AF	AFWS	AF	AFWS
3 SYMONDS DRIVE	F	F	F	F	F	F	F	WF	F	WSF				F	FW	F	F	F	F	F
4 POLICE/FIRE BLDG	F	F	F	FW	F	F	F		F	F		F	A	WFS	AF	AFW	F	F	F	F
5 WATER PLANT																				
WEST OF PLANT	F	F	F	F	F	F	F	F	F	F		F		WAF	AF	AF	F	F	F	F
S ALONG SYMONDS	F	F	F	F	F	F	F	F	F	F				WF	AF	AF	F	F	F	F
N OVER RESERVOIR	F	F	F	F	F	FWS	F	F	F	F		F	A	WAF	AF	AFS	AF	AF	F	AF
6 PW GARAGE	F	F	F	F	F	F	F	WFS	F	WSF		F		WF	F	F	F	F	F	F
7 BRUSH HILL	F	F	F	F	F	F	F	F	F	F		F	A	WAFS	AF	AFW	AF	AF	F	AF
8 PEIRCE PARK																				
FAR EAST - N	F	AF	AF	WSF	F	FWS	AF	AF	AF	AF	A	AF		A	F	F	F	AF	F	AF
NEAR EAST - N	F	AF	AF	WSF	F	FWS	AF	AF	AF	AF	A	AF		A	F	F	F	AF	F	AF
FAR EAST - S	F	AF	AF	WSF	F	F	AF	AF	AO	AO	A	F		A	F	F	F	AF	F	AF
NEAR EAST - S	F	AF	AF	WSF	F	F	AF	AF	AO	AO	A	AF		A	F	F	F	AF	F	AF
PASSIVE AREAS	F	FWS	F	F	F	F	AF	F	F	F		F	A	WA	F	AFS	F	AF	F	AF
WEST FIELD	F	FAWS	AF	F	F	F	AF	AF	AF	AF	A	F		A	F	F	F	AF	F	AF
9 RAVINE & CTY LINE	F	F	F	F	F	F	F	F	F	F		F		F	FW	F	F	F	F	F
10 RAVINE & OAK	F	F	F	F	F	F	F	F	F	F		F		F	FW	F	F	F	F	F
11 YORK & WALKER	F	F	F	F	F	F	F	F	O	F		F								
12 MADISON @ OGDEN	F		F				F		F			F								
13 BURNS FIELD																				
ICE RINK					S		A						W	FA	AF	AF	F	AFWS	AF	AF
SOCCER AREA	F	–	AF	F	F	FWS	AF	WAFS	AF	WASF	S	AFS	W	FA	AF	AF	F	AFWS	AF	AF
PLAYGROUND	F	–	F	WS	F	F	AF	F	F	F		F		A	AF	AF	F	AF	F	F
FRINGE	F	WFS	F	WSF	F	FWS	F	WFS	F	WSF		F	W	A	AF	AF	F	AFW	F	F
14 STOUGH PARK																				
ICE RINK							AF		F		S	AFS	A	WAF	AF	AF	F	AFWS	F	AFS
RAILROAD BANK		WS	F	WSF	F	FWS	AF	F	F	F		F	A	WAF	AF	AF	F	AFS	F	AF
EAST PASSIVE	F	F	F	F	F	F	AF	FWS	F	WSF		F	A	WAF	AF	AF	F	AFS	F	AF
CENTRAL PASSIVE	F	FW	F	F	F	F	AF	F	F	ASF		F	A	WAF	AF	AF	F	AFS	F	AF
15 W HINSDALE STA	F	F	F	F	F	F	F	FS	F	WSF										

A = AERATE/F = FERTILIZE/O = ORG NAT FERT/S = SEED STARTER FERT/W = WEED CONTROL

GROUNDS MAINT. HISTORY	SPR 2002	FALL 2002	SPR 2003	FALL 2003	SPR 2004	FALL 2004	SPR 2005	FALL 2005	SPR 2006	FALL 2006	SPR 2007	FALL 2007	SPR 2008	FALL 2008	SPR 2009	FALL 2009	SPR 2010	FALL 2010	SPR 2011	FALL 2011
16 JACKSON: 4TH - 8TH	F	O	F	F	F	F	F	F	F	F		F		F	F	AFWS	F	F	F	F
17 JACKSON PRAIRIE	F	F	F	F	F	FWS	F	F	O	O	S		S							
18 MELIN PARK	F	AF	AF	AFSW	F	F	F	F	AF	F	S	AFS	AO	AO	AOS	AOS	O	AS	O	AS
19 DIETZ PARK	F	AF	AF	AFSW	F	F	F	F	AF	WFS		AFS		AF	AF	AFWS	F	AFS	F	AFS
20 ROBBINS PARK																				
NE - NORTH	F	AF	F	const	F	WS	AF	AF	AF	AF	AS	AFS	WA	WAF	AFW	AFS	F	AFS	AF	AFWS
NE - SOUTH	F	AF	F	const	F	WS	AF	AF	AF	AF	AS	AFS	WA	WAF	AFW	AFS	F	AFS	AF	AFWS
CENTRAL	F	AF	F	F	AF	FW	AFS	FS	F	WFS	AS	AFS	WA	WAFS	AFWS	AFWS	F	AFS	AF	AFWS
SOUTHWEST	F	AF	AF	A	F	FWS	AF	AF	F	AF	S	AFS	WA	WAF	AFW	AFS	F	AFS	AF	AFWS
PARKWAYS	F	AF	F	WS	FS	F	AF	F	F	F		F	WA	WAF	AFW	AFS	F	AFS	AF	AFWS
21 SWIMMING POOL																				
NORTH	F	F	F	F	F	FWS	F	F	F	F		F		WAF	F	F	F	AFS	F	AFS
SOUTH	F	F	F	FW	F	F	F	F	F	F		F		WF	F	F	F	AFS	F	AFS
WEST	F	FWS	F	FW	F	FWS	F	F	F	F		F		WF	F	AF	F	AFS	F	AFS
22 EHRET PARK	F	F	F	F	F	F	F	F	F	F		F	WA	F	AF	AFS	F	F	F	AFWS
23 HINS: STOUGH-GARF		F	F	F	F	F	F	WFS	F	F										
24 ELEANOR'S PARK	F	F	F	FW	F	F	F	F	F	F		F		A	F	F	F	AF	F	F
25 CHICAGO @ BNRR		FWS		FWS		F	F	F	F	F					F	F	F	F	F	AFWS
26 HIGHLAND PARK																				
PASSIVE	F	FWS	F	F	F	F	F	F	F	F		F	WA	WAF	AF	AFS	F	F	F	AFWS
PARKWAYS	F	FWS	F	F	F	F	F	F	F	F		F	WA	WAF	AF	AFWS	F	F	F	AFWS
27 VEECK PARK	A	AWF	AF	ASF	AF	AF	ASF	AF	AF	AWSF	AS	AFS	A	WAFS	AF	AFS	F	AFS	F	
28 CHIC@ PRINCETON	F	F	F	F	F	F	F	F	F	AF		F	W	A	F	F	F	F	F	F
29 1ST & PRINCETON	F	F	F	FW	F	F	F	F	F	F		F	W	A	F	F	F	F	F	F
30 3RD & PRINCETON	F	F	F	F	F	FWS	F	F	F	F		F	W		F	F	F	F	F	F
31 COLUMBIA: 1ST-3RD		F		F		F	F	F	F	F		F		F	F	F	F	F	F	F

A = AERATE/F = FERTILIZE/O = ORG NAT FERT/S = SEED STARTER FERT/W = WEED CONTROL

GROUNDS MAINT. HISTORY	SPR 2002	FALL 2002	SPR 2003	FALL 2003	SPR 2004	FALL 2004	SPR 2005	FALL 2005	SPR 2006	FALL 2006	SPR 2007	FALL 2007	SPR 2008	FALL 2008	SPR 2009	FALL 2009	SPR 2010	FALL 2010	SPR 2011	FALL 2011
32 BROOK PARK																				
PLAYING FIELD	F	AF	AF	AF	AF	AF	AF	F	F	F		AF		AFS	AFWS	AFWS	AFS	AFS	AFS	AFS
FRINGE AREAS	F	AF	AF	AF	AF	AF	F	FWS	F	F		F		AFS	AFW	AFW	F	AFS	F	AFS
33 6TH & PRINCETON	F	F	F	F	F	F	F	F	F	F		F	W	A	F	F	F	F	F	F
34 7TH & HARDING	F	F	F	F	F	F	F	F	F	F		F		F	F	F	F	F	F	F
35 WOODLAND PARK	F	F	F	F	F	F	F	FWS	F	WSF		F			FW	F	F	F	F	AFWS
36 TAFT @ 55TH		F		F		F		F		F										
37 7TH & WILSON		F		F		F		F		F		F		F	F	F	F	F	F	F
38 CLEVELAND @ 55TH	F	F	F	FW	F	F		F		F										
39 WOODLAND DR ISLE	F	F	F	F	F	F	F	FWS	F	F		F	W	AF	F	F	F	F	F	F
40 DALEWOOD ISLAND	F	F	F	F	F	F	F	F	F	F				F	F	F	F	F	F	F
41 COUNTY LINE CT	F	F	F		F									F						
42 PAMELA CIRCLE																				
43 CHARLESTON RD	F	F	F	AF	F	F	F	F	F	WF		F	S	AF	AFW	AF	F	F	F	F
44 KLM PARK																				
NEAR BUILDINGS	F	FS	F	FWS	F	FWS	F	WFS	F	AWSF		F	W	AF	AF	AFWS	F	AFS	F	AFWS
CONCERT HILL	F	FS	F	FSW	AF	AF	AF	AF	F	AF	AS	F	W	AF	AF	AFW	F	AF	F	AFWS
NORTH OF CREEK	F	FS	F	F	F	AWF	AF	F	AF	F		F	W	AF	AF	AFW	F	AF	F	AF
EAST PLAY AREA	F	AFS	AF	AFSW	AF	F	AF	AF	AF	AWF	AS	AFS	W	AF	AF	AFWS	F	AFS	F	AFWS
SOUTH OF ROAD	F	FS	F	F	F	WF	AF	F	F	F		F	W	AF	AFO	AFO	F	AF	F	AFWS
45 4TH ST ISLANDS	F	F	F	F	F	F	F	F	F	F		F		WAF	F	F	F	F	F	F
46 OAK @ 9TH																				
47 ELM ; 9TH - 55TH	F				F															
48 WASHINGTON CIRCLE	F	F	F	FW	F	F	F	F	F	F		F	A	WAF	F	F	F	F	F	AFWS
49 WASHINGTON LOT	F	F	F	const	F															
50 PARKWAYS @ HMS	F	F	F	const	F							F								
51 LINCOLN LOT	F	F	F	const	F															
52 VILLAGE LOT	F	F	F	const	F			WS												
53 W OF POST CIRCLE	F	W	F		F					F										
54 DUNCAN FIELD												F			A	A		A		

A = AERATE/F = FERTILIZE/O = ORG NAT FERT/S = SEED STARTER FERT/W = WEED CONTROL

ACRES OF ACTIVITY SPRING 2011

LOCATION	AREA SF	AREA AC	FERT	FERT ORG	WEED CHEM	WEED ORG	SPREAD SEED	AERATE	FERT	FERT ORG	WEED CHEM	WEED ORG	SPREAD SEED	AERATE
1 MEMORIAL BUILDING														
NORTH	35,200	0.81	X	O	O	O	X	X	0.81	0.00	0.00	0.00	0.81	0.81
SOUTH	62,500	1.43	X	X	O	X	X	X	1.43	1.43	0.00	1.43	1.43	1.43
2 BURLINGTON PARK	62,400	1.43	X	O	O	O	O	X	1.43	0.00	0.00	0.00	0.00	1.43
3 SYMONDS DRIVE	18,400	0.42	X	O	O	O	O	O	0.42	0.00	0.00	0.00	0.00	0.00
4 POLICE/FIRE BUILDING	5,200	0.12	X	O	O	O	O	O	0.12	0.00	0.00	0.00	0.00	0.00
5 WATER PLANT														
WEST OF PLANT	20,000	0.46	X	O	O	O	O	O	0.46	0.00	0.00	0.00	0.00	0.00
SOUTH ALONG SYMONDS	4,500	0.10	X	O	O	O	O	O	0.10	0.00	0.00	0.00	0.00	0.00
NORTH OVER RESERVOIR	64,400	1.48	X	O	O	O	O	O	1.48	0.00	0.00	0.00	0.00	0.00
6 PUBLIC WORKS GARAGE	5,200	0.12	X	O	O	O	O	O	0.12	0.00	0.00	0.00	0.00	0.00
7 BRUSH HILL	119,400	2.74	X	O	O	O	O	O	2.74	0.00	0.00	0.00	0.00	0.00
8 PEIRCE PARK														
FAR EAST FIELDS	49,050	1.13	O	O	O	O	O	O	0.00	0.00	0.00	0.00	0.00	0.00
NEAR EAST FIELDS	49,050	1.13	O	O	O	O	O	O	0.00	0.00	0.00	0.00	0.00	0.00
PASSIVE AREAS	173,200	3.98	O	O	O	O	O	O	0.00	0.00	0.00	0.00	0.00	0.00
WEST FIELD	62,500	1.43	O	O	O	O	O	O	0.00	0.00	0.00	0.00	0.00	0.00
9 RAVINE & COUNTY LINE	900	0.02	X	O	O	O	O	O	0.02	0.00	0.00	0.00	0.00	0.00
10 RAVINE & OAK	3,000	0.07	X	O	O	O	O	O	0.07	0.00	0.00	0.00	0.00	0.00
11 YORK & WALKER	4,000	0.09	O	O	O	O	O	O	0.00	0.00	0.00	0.00	0.00	0.00
12 MADISON @ OGDEN	9,950	0.23	O	O	O	O	O	O	0.00	0.00	0.00	0.00	0.00	0.00
13 BURNS FIELD														
ICE RINK	73,500	1.69	X	O	O	O	X	X	1.69	0.00	0.00	0.00	1.69	1.69
SOCCER AREA	37,500	0.86	X	O	O	O	O	X	0.86	0.00	0.00	0.00	0.00	0.86
PLAYGROUND	8,000	0.18	X	O	O	O	O	O	0.18	0.00	0.00	0.00	0.00	0.00
FRINGE	117,600	2.70	X	O	O	O	O	O	2.70	0.00	0.00	0.00	0.00	0.00
14 STOUGH PARK														
ICE RINK	22,800	0.52	X	O	O	O	O	O	0.52	0.00	0.00	0.00	0.00	0.00
RAILROAD BANK	38,400	0.88	X	O	O	O	O	O	0.88	0.00	0.00	0.00	0.00	0.00
EAST PASSIVE	18,700	0.43	X	O	O	O	O	O	0.43	0.00	0.00	0.00	0.00	0.00
CENTRAL PASSIVE	34,400	0.79	X	O	O	O	O	O	0.79	0.00	0.00	0.00	0.00	0.00
15 WEST HINSDALE STATION	8,950	0.21	O	O	O	O	O	O	0.00	0.00	0.00	0.00	0.00	0.00

LOCATION	AREA SF	AREA AC	FERT	FERT ORG	WEED CHEM	WEED ORG	SPREAD SEED	AERATE	FERT	FERT ORG	WEED CHEM	WEED ORG	SPREAD SEED	AERATE
16 JACKSON: 4TH - 8TH	228,900	5.25	X	O	O	O	O	O	5.25	0.00	0.00	0.00	0.00	0.00
17 JACKSON PRAIRIE	21,780	0.50	O	O	O	O	O	O	0.00	0.00	0.00	0.00	0.00	0.00
18 MELIN PARK	97,300	2.23	O	X	O	O	O	O	0.00	2.23	0.00	0.00	0.00	0.00
19 DIETZ PARK	54,200	1.24	X	O	O	O	O	O	1.24	0.00	0.00	0.00	0.00	0.00
20 ROBBINS PARK	591,700	13.58												
TOTAL	591,700	13.58	X	O	O	O	O	X	13.58	0.00	0.00	0.00	0.00	13.58
NORTHEAST - NORTH	"		O	O	O	O	O	X	0.00	0.00	0.00	0.00	0.00	0.00
NORTHEAST - SOUTH	"		O	O	O	O	O	X	0.00	0.00	0.00	0.00	0.00	0.00
CENTRAL	"	1.24	O	O	O	O	O	X	0.00	0.00	0.00	0.00	0.00	1.24
SOUTHWEST	"		O	O	O	O	O	X	0.00	0.00	0.00	0.00	0.00	0.00
PARKWAYS	"	0.52	O	O	O	O	O	X	0.00	0.00	0.00	0.00	0.00	0.52
FOOTBALL	54,000	1.24	O	O	O	O	O	X	0.00	0.00	0.00	0.00	0.00	1.24
21 SWIMMING POOL														
NORTH	8,700	0.20	X	O	O	O	O	O	0.20	0.00	0.00	0.00	0.00	0.00
SOUTH	8,700	0.20	X	O	O	O	O	O	0.20	0.00	0.00	0.00	0.00	0.00
WEST	23,100	0.53	X	O	O	O	O	O	0.53	0.00	0.00	0.00	0.00	0.00
22 EHRET PARK	24,500	0.56	X	O	O	O	O	O	0.56	0.00	0.00	0.00	0.00	0.00
23 HINSDALE: STOUGH - GARF	78,500	1.80	O	O	O	O	O	O	0.00	0.00	0.00	0.00	0.00	0.00
@VINE ST, QUINCY ST														
24 ELEANOR'S PARK	18,200	0.42	X	O	O	O	O	O	0.42	0.00	0.00	0.00	0.00	0.00
25 CHICAGO @ BNRR	18,700	0.43	X	O	O	O	O	O	0.43	0.00	0.00	0.00	0.00	0.00
26 HIGHLAND PARK														
PASSIVE	195,000	4.48	X	O	O	O	O	O	4.48	0.00	0.00	0.00	0.00	0.00
PARKWAYS	"	0.00	X	O	O	O	O	O	0.00	0.00	0.00	0.00	0.00	0.00
27 VEECK PARK	522,720	12.00	X	O	O	O	O	O	12.00	0.00	0.00	0.00	0.00	0.00
28 CHICAGO @ PRINCETON	17,200	0.39	X	O	O	O	O	O	0.39	0.00	0.00	0.00	0.00	0.00
29 1ST & PRINCETON	15,500	0.36	X	O	O	O	O	O	0.36	0.00	0.00	0.00	0.00	0.00
30 3RD & PRINCETON	18,400	0.42	X	O	O	O	O	O	0.42	0.00	0.00	0.00	0.00	0.00
31 COLUMBIA: 1ST - 3RD	10,200	0.23	X	O	O	O	O	O	0.23	0.00	0.00	0.00	0.00	0.00
32 BROOK PARK														
PLAYING FIELD	236,800	5.44	X	O	O	O	X	X	5.44	0.00	0.00	0.00	5.44	5.44
FRINGE AREAS(near tennis)	"	0.00	X	O	O	O	X	X	0.00	0.00	0.00	0.00	0.00	0.00
33 6TH & PRINCETON	2,700	0.06	X	O	O	O	O	O	0.06	0.00	0.00	0.00	0.00	0.00
34 7TH & HARDING	8,800	0.20	X	O	O	O	O	O	0.20	0.00	0.00	0.00	0.00	0.00
35 WOODLAND PARK	198,000	4.55	X	O	O	O	O	O	4.55	0.00	0.00	0.00	0.00	0.00
36 TAFT @ 55TH	30,600	0.70	O	O	O	O	O	O	0.00	0.00	0.00	0.00	0.00	0.00
37 7TH & WILSON	800	0.02	X	O	O	O	O	O	0.02	0.00	0.00	0.00	0.00	0.00
38 CLEVELAND @ 55TH	7,900	0.18	O	O	O	O	O	O	0.00	0.00	0.00	0.00	0.00	0.00
39 WOODLAND ISLANDS	35,700	0.82	X	O	O	O	O	O	0.82	0.00	0.00	0.00	0.00	0.00
40 DALEWOOD ISLAND	4,000	0.09	O	O	O	O	O	O	0.00	0.00	0.00	0.00	0.00	0.00

LOCATION	AREA SF	AREA AC	FERT	FERT ORG	WEED CHEM	WEED ORG	SPREAD SEED	AERATE	FERT	FERT ORG	WEED CHEM	WEED ORG	SPREAD SEED	AERATE
41 COUNTY LINE CT	900	0.02	O	O	O	O	O	O	0.00	0.00	0.00	0.00	0.00	0.00
42 PAMELA CIRCLE	500	0.01	O	O	O	O	O	O	0.00	0.00	0.00	0.00	0.00	0.00
43 CHARLESTON RD	48,900	1.12	X	O	O	O	O	O	1.12	0.00	0.00	0.00	0.00	0.00
44 KLM PARK														
NEAR BLDGS (west & pkwy)	250,000	5.74	X	X	O	O	O	O	5.74	5.74	0.00	0.00	0.00	0.00
CONCERT HILL	1,662,000	4.67	X	O	O	O	O	O	4.67	0.00	0.00	0.00	0.00	0.00
NORTH OF CREEK	"	33.48	X	O	O	O	X	O	33.48	0.00	0.00	0.00	33.48	0.00
EAST PLAY AREA	203,500	4.67	X	O	O	O	O	O	4.67	0.00	0.00	0.00	0.00	0.00
SOUTH OF ROAD	"	incl	X	X	O	X	O	O	incl	incl	0.00	incl	0.00	0.00
45 4TH ST ISLANDS	55,000	1.26	X	O	O	O	O	O	1.26	0.00	0.00	0.00	0.00	0.00
46 OAK @ 9TH	3,400	0.08	O	O	O	O	O	O	0.00	0.00	0.00	0.00	0.00	0.00
47 ELM ; 9TH - 55TH	15,450	0.35	O	O	O	O	O	O	0.00	0.00	0.00	0.00	0.00	0.00
48 WASHINGTON CIRCLE	20,200	0.46	X	O	O	O	O	O	0.46	0.00	0.00	0.00	0.00	0.00
49 WASHINGTON LOT	1,150	0.03	O	O	O	X	O	O	0.00	0.00	0.00	0.03	0.00	0.00
50 PARKWAYS @ HMS	3,200	0.07	O	O	O	X	O	O	0.00	0.00	0.00	0.07	0.00	0.00
51 LINCOLN LOT	2,800	0.06	O	O	O	X	O	O	0.00	0.00	0.00	0.06	0.00	0.00
52 VILLAGE LOT	7,450	0.17	O	O	O	X	O	O	0.00	0.00	0.00	0.17	0.00	0.00
53 WEST OF POST CIRCLE	6,000	0.14	O	O	O	O	O	O	0.00	0.00	0.00	0.00	0.00	0.00
54 DUNCAN FIELD	73,500	1.69	O	O	O	O	O	O	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	6,586,950	151.22					ACREAGE		120.03	9.40	0.00	1.76	42.85	28.24

ACRES OF ACTIVITY FALL 2011

LOCATION	AREA SF	AREA AC	FERT	FERT ORG	WEED CHEM	WEED ORG	SPREAD SEED	AERATE	FERT	FERT ORG	WEED CHEM	WEED ORG	SPREAD SEED	AERATE
1 MEMORIAL BUILDING														
NORTH	35,200	0.81	X	X	X	X	X	X	0.81	0.81	0.81	0.81	0.81	0.81
SOUTH	62,500	1.43	X	X	X	X	X	X	1.43	1.43	1.43	1.43	1.43	1.43
2 BURLINGTON PARK	62,400	1.43	X	X	X	X	X	X	1.43	1.43	1.43	1.43	1.43	1.43
3 SYMONDS DRIVE	18,400	0.42	X	O	O	O	O	O	0.42	0.00	0.00	0.00	0.00	0.00
4 POLICE/FIRE BUILDING	5,200	0.12	X	O	O	O	O	O	0.12	0.00	0.00	0.00	0.00	0.00
5 WATER PLANT														
WEST OF PLANT	20,000	0.46	X	O	O	O	O	O	0.46	0.00	0.00	0.00	0.00	0.00
SOUTH ALONG SYMONDS	4,500	0.10	X	O	O	O	O	O	0.10	0.00	0.00	0.00	0.00	0.00
NORTH OVER RESERVOIR	64,400	1.48	X	O	O	O	O	X	1.48	0.00	0.00	0.00	0.00	1.48
6 PUBLIC WORKS GARAGE	5,200	0.12	X	O	O	O	O	O	0.12	0.00	0.00	0.00	0.00	0.00
7 BRUSH HILL	119,400	2.74	X	O	O	O	O	X	2.74	0.00	0.00	0.00	0.00	2.74
8 PEIRCE PARK														
FAR EAST FIELDS	49,050	1.13	O	O	O	O	O	X	0.00	0.00	0.00	0.00	0.00	1.13
NEAR EAST FIELDS	49,050	1.13	O	O	O	O	O	X	0.00	0.00	0.00	0.00	0.00	1.13
PASSIVE AREAS	173,200	3.98	O	O	O	O	O	X	0.00	0.00	0.00	0.00	0.00	3.98
WEST FIELD	62,500	1.43	O	O	O	O	O	X	0.00	0.00	0.00	0.00	0.00	1.43
9 RAVINE & COUNTY LINE	900	0.02	X	O	O	O	O	O	0.02	0.00	0.00	0.00	0.00	0.00
10 RAVINE & OAK	3,000	0.07	X	O	O	O	O	O	0.07	0.00	0.00	0.00	0.00	0.00
11 YORK & WALKER	4,000	0.09	O	O	O	O	O	O	0.00	0.00	0.00	0.00	0.00	0.00
12 MADISON @ OGDEN	9,950	0.23	O	O	O	O	O	O	0.00	0.00	0.00	0.00	0.00	0.00
13 BURNS FIELD														
ICE RINK	73,500	1.69	X	O	O	O	X	X	1.69	0.00	0.00	0.00	1.69	1.69
SOCCER AREA	37,500	0.86	X	O	O	O	X	X	0.86	0.00	0.00	0.00	0.86	0.86
PLAYGROUND	8,000	0.18	X	O	O	O	O	O	0.18	0.00	0.00	0.00	0.00	0.00
FRINGE	117,600	2.70	X	O	O	O	O	X	2.70	0.00	0.00	0.00	0.00	2.70
14 STOUGH PARK														
ICE RINK	22,800	0.52	X	O	O	O	X	X	0.52	0.00	0.00	0.00	0.52	0.52
RAILROAD BANK	38,400	0.88	X	O	O	O	O	O	0.88	0.00	0.00	0.00	0.00	0.00
EAST PASSIVE	18,700	0.43	X	O	O	O	O	O	0.43	0.00	0.00	0.00	0.00	0.00
CENTRAL PASSIVE	34,400	0.79	X	O	O	O	O	O	0.79	0.00	0.00	0.00	0.00	0.00
15 WEST HINSDALE STATION	8,950	0.21	O	O	O	O	O	O	0.00	0.00	0.00	0.00	0.00	0.00

LOCATION	AREA SF	AREA AC	FERT	FERT ORG	WEED CHEM	WEED ORG	SPREAD SEED	AERATE	FERT	FERT ORG	WEED CHEM	WEED ORG	SPREAD SEED	AERATE
16 JACKSON: 4TH - 8TH	228,900	5.25	X	O	O	O	O	O	5.25	0.00	0.00	0.00	0.00	0.00
17 JACKSON PRAIRIE	21,780	0.50	O	O	O	O	O	O	0.00	0.00	0.00	0.00	0.00	0.00
18 MELIN PARK	97,300	2.23	O	O	O	O	X	X	0.00	0.00	0.00	0.00	2.23	2.23
19 DIETZ PARK	54,200	1.24	X	O	O	O	X	X	1.24	0.00	0.00	0.00	1.24	1.24
20 ROBBINS PARK	591,700	13.58												
TOTAL	591,700	13.58	X	O	X	O	X	X	13.58	0.00	13.58	0.00	13.58	13.58
NORTHEAST - NORTH	"		X	O	X	O	X	X	0.00	0.00	0.00	0.00	0.00	0.00
NORTHEAST - SOUTH	"		X	O	X	O	X	X	0.00	0.00	0.00	0.00	0.00	0.00
CENTRAL	"	1.24	X	O	X	O	X	X	1.24	0.00	1.24	0.00	1.24	1.24
SOUTHWEST	"		X	O	X	O	O	X	0.00	0.00	0.00	0.00	0.00	0.00
PARKWAYS	"	0.52	X	O	X	O	X	X	0.52	0.00	0.52	0.00	0.52	0.52
FOOTBALL	54,000	1.24	X	O	X	O	X	X	1.24	0.00	1.24	0.00	1.24	1.24
21 SWIMMING POOL														
NORTH	8,700	0.20	X	O	O	O	X	X	0.20	0.00	0.00	0.00	0.20	0.20
SOUTH	8,700	0.20	X	O	O	O	X	X	0.20	0.00	0.00	0.00	0.20	0.20
WEST	23,100	0.53	X	O	O	O	X	X	0.53	0.00	0.00	0.00	0.53	0.53
22 EHRET PARK	24,500	0.56	X	O	X	O	X	X	0.56	0.00	0.56	0.00	0.56	0.56
23 HINSDALE: STOUGH - GARF	78,500	1.80	O	O	O	O	O	O	0.00	0.00	0.00	0.00	0.00	0.00
@VINE ST, QUINCY ST														
24 ELEANOR'S PARK	18,200	0.42	X	O	O	O	O	O	0.42	0.00	0.00	0.00	0.00	0.00
25 CHICAGO @ BNRR	18,700	0.43	X	O	X	O	X	X	0.43	0.00	0.43	0.00	0.43	0.43
26 HIGHLAND PARK														
PASSIVE	195,000	4.48	X	O	X	O	X	X	4.48	0.00	4.48	0.00	4.48	4.48
PARKWAYS	"	0.00	X	O	X	O	X	X	0.00	0.00	0.00	0.00	0.00	0.00
27 VEECK PARK	522,720	12.00	X	O	O	O	O	O	12.00	0.00	0.00	0.00	0.00	0.00
28 CHICAGO @ PRINCETON	17,200	0.39	X	O	O	O	O	O	0.39	0.00	0.00	0.00	0.00	0.00
29 1ST & PRINCETON	15,500	0.36	X	O	O	O	O	O	0.36	0.00	0.00	0.00	0.00	0.00
30 3RD & PRINCETON	18,400	0.42	X	O	O	O	O	O	0.42	0.00	0.00	0.00	0.00	0.00
31 COLUMBIA: 1ST - 3RD	10,200	0.23	X	O	O	O	O	O	0.23	0.00	0.00	0.00	0.00	0.00
32 BROOK PARK														
PLAYING FIELD	236,800	5.44	X	O	O	O	X	X	5.44	0.00	0.00	0.00	5.44	5.44
FRINGE AREAS(near tennis)	"	0.00	X	O	O	O	X	X	0.00	0.00	0.00	0.00	0.00	0.00
33 6TH & PRINCETON	2,700	0.06	X	O	O	O	O	O	0.06	0.00	0.00	0.00	0.00	0.00
34 7TH & HARDING	8,800	0.20	X	O	O	O	O	O	0.20	0.00	0.00	0.00	0.00	0.00
35 WOODLAND PARK	198,000	4.55	X	O	X	O	X	X	4.55	0.00	4.55	0.00	4.55	4.55
36 TAFT @ 55TH	30,600	0.70	O	O	O	O	O	O	0.00	0.00	0.00	0.00	0.00	0.00
37 7TH & WILSON	800	0.02	X	O	O	O	O	O	0.02	0.00	0.00	0.00	0.00	0.00
38 CLEVELAND @ 55TH	7,900	0.18	O	O	O	O	O	O	0.00	0.00	0.00	0.00	0.00	0.00
39 WOODLAND ISLANDS	35,700	0.82	X	O	O	O	O	O	0.82	0.00	0.00	0.00	0.00	0.00
40 DALEWOOD ISLAND	4,000	0.09	O	O	O	O	O	O	0.00	0.00	0.00	0.00	0.00	0.00

LOCATION	AREA SF	AREA AC	FERT	FERT ORG	WEED CHEM	WEED ORG	SPREAD SEED	AERATE	FERT	FERT ORG	WEED CHEM	WEED ORG	SPREAD SEED	AERATE
41 COUNTY LINE CT	900	0.02	O	O	O	O	O	O	0.00	0.00	0.00	0.00	0.00	0.00
42 PAMELA CIRCLE	500	0.01	O	O	O	O	O	O	0.00	0.00	0.00	0.00	0.00	0.00
43 CHARLESTON RD	48,900	1.12	X	O	O	O	X	O	1.12	0.00	0.00	0.00	1.12	0.00
44 KLM PARK														
NEAR BLDGS (west & pkwy)	250,000	5.74	X	X	X	X	X	X	5.74	5.74	5.74	5.74	5.74	5.74
CONCERT HILL	1,662,000	4.67	X	O	X	O	X	X	4.67	0.00	4.67	0.00	4.67	4.67
NORTH OF CREEK	"	33.48	X	O	O	O	X	X	33.48	0.00	0.00	0.00	33.48	33.48
EAST PLAY AREA	203,500	4.67	X	O	X	O	X	X	4.67	0.00	4.67	0.00	4.67	4.67
SOUTH OF ROAD	"	incl	X	X	X	X	X	X	incl	incl	incl	incl	incl	incl
45 4TH ST ISLANDS	55,000	1.26	X	O	O	O	O	O	1.26	0.00	0.00	0.00	0.00	0.00
46 OAK @ 9TH	3,400	0.08	O	O	O	O	O	O	0.00	0.00	0.00	0.00	0.00	0.00
47 ELM ; 9TH - 55TH	15,450	0.35	O	O	O	O	O	O	0.00	0.00	0.00	0.00	0.00	0.00
48 WASHINGTON CIRCLE	20,200	0.46	X	O	X	O	X	X	0.46	0.00	0.46	0.00	0.46	0.46
49 WASHINGTON LOT	1,150	0.03	O	O	O	O	O	O	0.00	0.00	0.00	0.00	0.00	0.00
50 PARKWAYS @ HMS	3,200	0.07	O	O	O	O	O	O	0.00	0.00	0.00	0.00	0.00	0.00
51 LINCOLN LOT	2,800	0.06	O	O	O	O	O	O	0.00	0.00	0.00	0.00	0.00	0.00
52 VILLAGE LOT	7,450	0.17	O	O	O	O	O	O	0.00	0.00	0.00	0.00	0.00	0.00
53 WEST OF POST CIRCLE	6,000	0.14	O	O	O	O	O	O	0.00	0.00	0.00	0.00	0.00	0.00
54 DUNCAN FIELD	73,500	1.69	O	O	O	O	O	O	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	6,586,950	151.22					ACREAGE		123.03	9.41	45.81	9.41	93.32	106.79

ACRES OF ACTIVITY

	SPRING 2007	FALL 2007	SPRING 2008	FALL 2008	SPRING 2009	FALL 2009	SPRING 2010	FALL 2010	SPRING 2011	FALL 2011	TOTAL 2011	prev 3 yr avg
FERTILIZATION	0.0	132.7	0.0	114.3	130.4	130.8	122.3	130.8	120.3	123.3	243.6	209.5
WEED CONTROL	0.0	0.0	43.0	47.3	31.9	63.4	0.0	24.9	0.0	45.8	45.8	70.1
SEEDING	0.0	13.2	1.6	24.0	23.0	63.7	10.4	66.3	42.9	93.3	136.2	62.9
AERATE	45.7	38.0	50.9	119.8	111.4	111.4	9.1	112.2	28.2	106.7	134.9	171.6

Elm Tree Loss History

year	public loss	amputation	private loss	estimated start pop	end pop	% loss resid pop
1991	198	30	80	3,537	3,339	5.6%
1992	71	3	96	3,339	3,268	2.1%
1993	88	11	58	3,268	3,180	2.7%
1994	69	4	47	3,180	3,111	2.2%
1995	185	10	123	3,111	2,926	5.9%
1996	52	12	64	2,926	2,874	1.8%
1997	121	27	100	2,874	2,753	4.2%
1998	99	13	44	2,753	2,654	3.6%
1999	103	16	106	2,654	2,551	3.9%
2000	132	10	220	2,551	2,419	5.2%
2001	98	13	137	2,419	2,321	4.1%
2002	172	12	127	2,321	2,149	7.4%
2003	195	10	276	2,149	1,954	9.1%
2004	100	5	155	1,954	1,854	5.1%
2005	176	12	184	1,854	1,678	9.5%
2006	97	8	74	1,678	1,581	5.8%
2007	56	8	66	1,581	1,525	3.5%
2008	60	10	58	1,525	1,650	3.9%
2009	13	3	53	1,650	1,637	0.8%
2010	12	5	26	1,637	1,625	0.7%
total	2,097	222	2,094			54.1%
15 yr avg	99	11	113			4.6%

ELM TREES FUNGICIDED

year	public	private	total	cumulative public	cumulative private	cumulative total
2006	21	79	100	21	79	100
2007	515	79	594	536	158	694
2008	466	77	543	1002	235	1237
2009	436	73	509	1438	308	1746
2010	225	56	281	1663	364	2027
2011	429	45	474	2092	409	2501

Since 2007

12% of untreated elms have been lost.
1% of treated elms have been lost.

	2006 Treated Elms Lost In 2011
2006	7
2007	4
2008	4
2009	2
2010	3
2011	2

start pop	end pop	% loss
68	61	10.3%
61	57	6.6%
57	53	7.0%
53	51	3.8%
51	48	5.9%
48	46	4.2%

	2007 Treated Elms Lost In 2011
2007	4
2008	1
2009	1
2010	2
2011	2

start pop	end pop	% loss
12	8	33.3%
8	7	12.5%
7	6	14.3%
6	4	33.3%
4	2	50.0%

	2008 Treated Elms Lost In 2011
2008	2
2009	1
2010	3
2011	2

start pop	end pop	% loss
27	25	7.4%
25	24	4.0%
24	21	12.5%
21	19	9.5%

	2009 Treated Elms Lost In 2011
2009	1
2010	2
2011	1

start pop	end pop	% loss
465	464	0.2%
464	462	0.4%
462	461	0.2%

	2010 Treated Elms Lost In 2011
2010	3
2011	1

start pop	end pop	% loss
433	430	0.7%
430	429	0.2%

	2011 Treated Elms Lost In 2011
2011	0

start pop	end pop	% loss
225	225	0.0%

	start pop	end pop	% loss
Total	1,190	1,182	6.0%

Since 2004

39% of untreated elms have been lost.
6% of treated elms have been lost.

Since 2007

12% of untreated elms have been lost.
1% of treated elms have been lost.

2010-2011 WEATHER DATA

2010 PRECIPITATION TOTALS IN INCHES

		Average		
JAN	2010	1.75	1.13	65%
FEB	2010	1.63	1.64	101%
MAR	2010	2.65	1.55	58%
APR	2010	3.68	3.01	82%
MAY	2010	3.38	4.90	145%
JUNE	2010	3.63	6.17	170%
JULY	2010	3.51	8.84	252%
AUG	2010	4.62	1.80	39%
SEPT	2010	3.27	2.78	85%
OCT	2010	2.71	0.92	34%
NOV	2010	3.01	1.23	41%
DEC	2010	2.43	2.73	112%
TOTAL		30.83	36.70	119%

2011 PRECIPITATION TOTALS IN INCHES

		Average		
JAN	2011	1.75	0.92	53%
FEB	2011	1.63	3.52	216%
MAR	2011	2.65	2.62	99%
APR	2011	3.68	4.90	133%
MAY	2011	3.38	7.27	215%
JUNE	2011	3.63	3.39	93%
JULY	2011	3.51	11.15	318%
AUG	2011	4.62	4.54	98%
SEPT	2011	3.27	3.45	106%
OCT	2011	2.71	1.98	73%
NOV	2011	3.01	NOT AVAILABLE	
DEC	2011	2.43	NOT AVAILABLE	
TOTAL THRU OCT		30.83	43.74	142%

2010-2011 WEATHER DATA

2010 TEMPERATURES IN DEGREES FAHRENHEIT

		Average		
JAN	2010	22.0	21.9	100%
FEB	2010	26.6	26.7	100%
MAR	2010	36.9	41.7	113%
APR	2010	48.5	54.6	113%
MAY	2010	59.0	61.7	105%
JUNE	2010	68.6	72.1	105%
JULY	2010	73.3	77.6	106%
AUG	2010	71.9	76.7	107%
SEPT	2010	64.5	65.1	101%
OCT	2010	52.8	48.8	92%
NOV	2010	39.8	45.3	114%
DEC	2010	27.5	26.5	96%
				104%

2011 TEMPERATURES IN DEGREES FAHRENHEIT

		Average		
JAN	2011	22.0	20.6	94%
FEB	2011	26.6	26.2	98%
MAR	2011	36.9	36.3	98%
APR	2011	48.5	47.7	98%
MAY	2011	59.0	57.9	98%
JUNE	2011	68.6	69.5	101%
JULY	2011	73.3	79.0	108%
AUG	2011	71.9	73.5	102%
SEPT	2011	64.5	62.2	96%
OCT	2011	52.8	NOT AVAILABLE	
NOV	2011	39.8	NOT AVAILABLE	
DEC	2011	27.5	NOT AVAILABLE	
				99.42%

"Step by Step"

GUIDE TO NATURAL TURF MANAGEMENT

A Season-by-Season Guide for Successful Natural Lawn Care

By Chip Osborne and Doug Wood

Step by Step
GUIDE TO NATURAL TURF MANAGEMENT

Step One: March/April

The Soil Test

Like a blood test when you go to the doctor, a soil test reveals what you can't see: it tells you what condition the soil is in and what kinds of amendments it might need. Using a clean sampling tube, take samples from various locations on the property (more samples for larger properties) at a 4 to 5 inch depth. Remove debris (roots, thatch) from the top of the sample, air dry the samples overnight, mix the samples thoroughly and send one cup of the mixture to the lab. Request a standard test, which usually includes soil pH, calcium, magnesium and potassium levels, phosphorus levels and Cation Exchange Capacity. Also, ask for a percentage of organic matter analysis.

Basic soil testing is available from university cooperative extensions (instructions and fee schedules are posted on their websites) and other labs. Detailed microbiology tests are offered by the Soil Foodweb. Basic tests range from $15 to $40, and biology tests range from $85 to $225.

Aeration

Compaction is the number one enemy of turfgrass, and is the most common problem faced by turf managers, particularly on playing fields with heavy traffic. Turf roots grow in the air spaces between soil particles, so compacted soil prevents them from penetrating deep into the soil where they can reach moisture and nutrients. If the soil is compacted to the point where a penetrometer reads more than 200 pounds per square inch in the top 3 inches of soil, aeration is required, using either a core or slice aerator. Aeration is stressful for turf and should only be undertaken when the grass is actively growing, but can be performed as often as every two to four weeks when necessary. Aerate in a criss-cross pattern until 15-20% of the soil surface has been exposed.

Compost Top Dress

Ideally, the organic matter percentage, or "OM," should be at or above 5%. If it's not, aerate and then top dress with a good quality compost. If the property has been chemically maintained, a 1/4 inch to 1/2 inch layer of compost (also called "soil conditioner") should be spread over the top of the entire lawn. Compost can be spread with a compost spreader, an air blower, or on small areas, by broadcasting with shovels. It will take about a yard of compost to cover 1000 sq ft with 1/2 inch of compost; one acre of turf will require approximately 40 yards.

First Mowing

Using sharp mower blades, cut the grass at 2 inches and remove and dispose of all clippings. This will help reduce the threat of lawn disease. Other than cutting game day fields, this is the only time clippings should be removed.

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GUIDE TO NATURAL TURF MANAGEMENT

Step Two: March/April

Pre Emergence Weed Control with Corn Gluten

Corn gluten is an all-natural 100% organic pre-emergence weed control and fertilizer (it adds a 10% charge of nitrogen). Corn gluten prevents weed seeds from germinating, so it needs to be used at the right time; in the northeast, blooming forsythia is a good signal that it's time for corn gluten. Remember that corn gluten prevents grass seed as well as weed seeds from germinating, so you won't be able to over-seed for a few weeks after the corn gluten has been applied.

pH Balance with Lime

The ideal pH for turf grass is between 6.5 and 7.0. The soil test will reveal the pH of the soil, and in many cases, give you the recommended amounts of lime to add to the lawn. Keep in mind that you should never apply more than fifty pounds of lime per 1,000 sq ft. (If you need more lime, it will have to be in two applications.) Also remember that lime can take up to three months to become fully integrated into the soil, so you won't see the results in a soil test before then. Use calcitic lime if calcium level is low; dolomitic lime if magnesium levels are low.

Feed the Soil with Compost Tea

An application of compost tea (see step four for recipes and application rates) fortified with bacterial foods (feather meal, seed meals) and fungal foods (insoluble humic acid and kelp meal). will help slow the normally accelerated spring growth rate by tying up some nutrients. These will be cycled back to the plants later in the season. Apply higher rates of tea if foliar disease is present. You can also mix in milky spore bacteria to build its population in the soil.

Soil Detoxification and Inoculation Using Other Amendments

Marine products such as **kelp** and **seaweed** contain minerals and add organic matter to the soil. They promote deep root growth which helps keep lawns green even during times of drought.

The minerals and nutrients found in **rockdust** are particularly useful in re-energizing soil that has been compromised by chemical use. It is also a natural source of potassium (K).

Mowing

Grass should be cut at 2.5 to 3 inches except where lower blade heights are required for sports. Remember never to cut more than the top 1/3 of the grass blade at any one time. Grass clippings should always be left on the lawn.

Step by Step
GUIDE TO NATURAL TURF MANAGEMENT

Step Three: April to June

Organic Fertilizer Application

The choice and application of the proper natural organic fertilizer is one of the most important aspects of natural lawn care. Unlike synthetic fertilizers, which are water soluble, natural organic fertilizers break down by the action of microbes which exist in the soil. In effect, you are feeding those microbes, which in turn make nutrients available to the plants.

Because of this slow-release characteristic, natural organic fertilizers will generally not produce the sudden, dramatic greening effect common to many commercial synthetic fertilizers with high nitrogen levels. On the other hand, because it remains in the soil for a longer period of time, less fertilizer will be required over the season. Fifty pounds will cover approximately 2,000 sq ft.

Fertilizers containing added phosphorus should generally be avoided unless a specific problem needs to be corrected. Increasing microbial life (bacteria and fungi) can help release phosphorus that is tied up in the soil. In many areas, excess phosphorus run off into streams and municipal water systems is a source of serious environmental problems.

As the level of organic matter is raised through the application of compost (the organic level should ideally be between 5% and 8%) the need for fertilizer is reduced.

Irrigation

Automatic sprinkler systems can be a great time saver, but they can also be a source of trouble. Over-watering is a primary cause of turf fungal problems, and can undo much of the work you do. The system should be calibrated to deliver no more than 1.5 inches of water per week, and even less if a rain event occurs. Placing an empty tuna can on the lawn, running the system and seeing how long it takes to fill the can will help you determine proper settings.

Spot Weed Control

Products containing combinations of vinegar and natural plant oils (e.g., "Burn Out") are a good choice as non-selective weed killers in sidewalks, driveways, gravel tracks and paths. These products can be found at professional lawn care distributors. In most cases the property must be flagged.

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Step Four: June/July

Compost Tea

The application of high quality compost tea can be an effective way to continue to build soil quality, increase resistance to diseases and help sustain turf during a drought. Compost tea is made by steeping top quality compost in water while circulating the water and adding nutrients. Commercial tea brewers range in size from 5 to 500 gallons and are available from many manufacturers. You can spray tea from a backpack sprayer or a traditional spray rig. Remember that you are spraying live organisms, so remove fine mesh filter screens and allow the spray to fall gently on plant and turf surfaces.

Basic Compost Tea Recipe

50 gallons of de-chlorinated water
4-5 pounds of high quality compost
2 oz. molasses
3 oz. humic acid

Generally speaking, a tea brewed with a high bacterial content is preferable for turf; tea with a higher fungal content is recommended for foliar spray on trees and shrubs.

Tea should be mixed with water in sufficient dilution to achieve a rate of 15-20 gallons per acre. A typical mix is 20 gallons of tea to 100 gallons of water. Problem areas can be treated with a higher concentration of tea.

There appears to be some correlation between the application of compost tea and reduction of pest problems, but in most states it is illegal to make any claims or statements regarding the beneficial effects of compost tea on pests.

Over-Seeding

The best defense against weeds is a strong and healthy turf. Given the opportunity, grass plants will out-compete most weeds. Over-seeding, which is simply adding new grass plants to an existing lawn or field, rejuvenates the lawn with new life, fills in bare spots and keeps weeds from growing. Use a high quality seed or seed mix that is appropriate for your climate and has a minimum of noxious weeds. (Check the label for weed content.)

When over-seeding, you will want to reduce the height of the lawn in steps, eventually bringing it down to about two inches, to give the new seed a chance to get sunlight and germinate. Once the seed has sprouted you can begin bringing the lawn back up to 3 inches.

When sports playing schedules permit, allow grass to grow to 3.5 or even 4 inches. This will help develop robust root systems and create strong, disease and drought-resistant plants.

Step by Step
GUIDE TO NATURAL TURF MANAGEMENT

Step Five: July/August

Natural Pest and Disease Control

A healthy, well maintained natural lawn will be resistant to most pests and diseases. However, lack of organic matter, poor cultural practices, too much water, and other stresses can reduce turf's ability to fend off pests and diseases. When pests present themselves, here are some natural solutions:

Beneficial nematodes have proven to be very effective at dealing with grubs. These are microscopic worms that feed on grub larvae. Nematodes are aquatic animals, and need moisture and grubs to survive. Apply with water and keep the soil moist for a few days after application (see package for details). You can purchase nematodes from an insectiary or nursery that carries beneficials.

Milky Spore is actually a disease which can be an effective biological control for Japanese beetles. The best time to apply is mid-to late summer when the new brood have hatched and are beginning to feed.

Here are some typical turf problems and recommended natural solutions:

Symptom	Possible Cause	Solution
Dandelions	Lack of calcium, low pH	Apply calcium, keep pH high
Moss	Low pH, too much moisture	Add lime, improve drainage
Red Thread	Lack of nitrogen	Fertilize with organic fertilizer, check potassium and raise if necessary
Dollar Spot	Lack of nitrogen, excess thatch, drought stress	Fertilize with organic fertilizer, apply compost top dress, irrigate
Crabgrass	Turf cut too close, excess nitrogen, low pH	Raise cutting height, over-seed, use organic (low N) fertilizer, apply lime to raise pH, apply corn gluten in spring
Thatch	Excess irrigation, improper mowing, too much fertilizer	Apply compost top dress, raise mower blades, leave lawn clippings on the lawn, adjust irrigation
Patches of dead grass	Grubs	Apply beneficial nematodes
Compaction	Sports, high traffic, machinery	Apply compost top dress, over-seed, apply organic fertilizer, mechanical aeration if necessary

Step by Step
GUIDE TO NATURAL TURF MANAGEMENT

Step Six: September/October

New Construction

There is no question that fall is the best time to construct a new lawn or field. Once the days get shorter and the nights get longer, you'll have less competition from weeds. Start by removing all old growth and roots, but do not roto-till. Add whatever amendments may be indicated by a soil test (this is also the best time to fix texture or composition problems, if any), then add top soil as required and spread 1/2 inch of compost on top. Broadcast good quality, climate-appropriate seed and roll or tamp to ensure good soil-to-seed contact. Keep moist but not wet.

Root Growth Enhancement

In the fall, turf roots continue to grow long after the grass has stopped. Feeding the roots with natural growth stimulators such as seaweed extract will prepare the plants for a boost of new growth in the spring. Aeration may also be appropriate at this time.

Lime/Compost Application

Fall is the another window of opportunity for the application of lime (if needed) and compost. A good shot of compost now will give the turf a good supply of nutrients to begin a new season in the spring.

* * *

This document is not intended to address all situations which may be encountered in professional turf management. No representations are expressed or implied regarding the suitability of any product or technique described herein for any individual property. No liability is assumed or may be ascribed to Grassroots Environmental Education, its project partners, authors, contributors or underwriters.

We gratefully acknowledge the contributions of all of our instructors and contributors, including James Sottilo, Jeff Frank and Paul Sachs through his excellent book "Handbook of Successful Ecological Lawn Care" available from Amazon.com and other booksellers.

Cost to do Natural Lawn Care in Melin Park

Soil Test	$100
Top Dress	$4,200
Corn Gluten Meal	$3,824
Lime	$1,176
Compost Tea	$3,920
Organic Fertilizer	$2,400
Spot Weed Control	$100
Grass Seed	$ 3,040
Total	**$18,760**

Grass Seed Mixes Currently Used by the Village of Hinsdale

Greenskeeper Glamour Mixture

Fine-textured mix with quick germination, providing adaptability to moderate shade as well as full sunlight. Contains Kentucky bluegrass for winter hardiness and durability, along with turf-type ryegrasses for lasting appearance.

30% Kentucky Bluegrass 98/85
30% Creeping Red Fescue
40% Containing 2 of the following turf-type perennial ryegrasses: Accent, APM, Caddieshack or Monterey II

Seeding Rate:

- New lawns: 4-6 lbs. per 1,000 feet^2
- Established lawns: 3-4 lbs. per 1,000 feet^2

Field of Dreams Athletic Mixture

30% Goalkeeper Perennial Ryegrass
30% Top Gun Perennial Ryegrass
20% Blue Chip Kentucky Bluegrass
20% Freedom III Kentucky Bluegrass

Seeding Rate:

- New lawns: 3-5 lbs. per 1,000 feet^2
- Established lawns: 2-3 lbs. per 1,000 feet^2

UNDERSTANDING YOUR SOIL TEST REPORT

SOIL TEST RESULTS

SOIL pH: A measure of active acidity or alkalinity in a soil/water slurry. pH 7.0 is neutral, pH <7.0 is acidic and pH >7.0 is alkaline. Most turf and ornamentals prefer a pH of 6.5-7.5. Certain acid-loving plants prefer a pH <6.0.

BUFFER pH: A measure of the soil's ability to acidify a buffered solution. Used to determine the resistance to change in pH (acidic buffer capacity), when the soil pH is below 6.3. The buffer pH (not soil pH) is used determine the lime requirement in most soils.

PHOSPHORUS (P): A measure of the available phosphorus (Bray 1) expressed in pounds per acre.

POTASSIUM (K): A measure of the available (exchangeable) potassium expressed in pounds per acre.

CALCIUM (Ca) and MAGNESIUM (Mg): A measure of the available (exchangeable) calcium and magnesium. Optimum soil test levels may vary depending on the cation exchange capacity and percent base saturation.

CATION EXCHANGE CAPACITY (CEC): A calculated value used to determine the relative nutrient holding capacity of the soil for the cations K^+, Ca^{++}, Mg^{++}, H^+ (hydrogen) & Na^+ (sodium), if a sodium test is requested. CEC values are expressed as milliequivalents per 100 grams (meq/100) of soil. Exchangeable cations determined using neutral (pH 7.0) 1M ammonium acetate.

Typical CEC Ranges	Soil Texture	Relative Nutrient Holding Capacity CEC
0-12	Coarse (sandy)	Very Low < 5
8-25	Medium (loamy)	Low < 10
22-40+	Fine (clayey)*	Medium 10-22
30-50+	Organic	High > 22

* Certain types of clay soils have lower CEC ranging from 3 to 12.

PERCENT BASE SATURATION: Calculated values showing the percentage of the CEC occupied by each tested cation. Most turfgrasses and ornamentals perform best when the cations are in balance in the ranges shown below:

POTASSIUM	- K	2-7%	
CALCIUM	- Ca	65-85%	
MAGNESIUM	- Mg	10-20%	
HYDROGEN	- H	0-5%*	(when present)
SODIUM	- Na	0-5%	(when tested)

* Higher hydrogen saturations (5-25%) may be acceptable for certain acid-loving plants. Calculated base saturations and CEC may be lower than normal when hydrogen saturation exceeds 20%.

ANALYTICAL RESULTS

MICRO & SECONDARY NUTRIENTS: Available micro and secondary nutrients can be interpreted according to the table below. Response to available micro and secondary nutrients may differ according to turf or ornamental plant type.

RELATIVE VALUE	IRON (Fe)	MANGANESE (Mn)	ZINC (Zn)	COPPER (Cu)	BORON (B)	SULFUR (S)
	lbs./acre					
LOW	<15	<10	<2	<0.5	<0.5	<20
MEDIUM	15-120	10-50	2-5	0.5-5.0	0.5-3.0	20-80
HIGH	>120	>50	>5	>5.0	>3.0	>80

ORGANIC MATTER (OM3): An estimate of the organic matter content of the soil reported as percent by weight. Organic matter is determined by combustion at 440°C using the U.S. Golf Assoc. method (ASTM D 2974).

SOLUBLE SALTS (SS): A measure of the salt concentration in the soil from both fertilizer and non-fertilizer sources.

Potential for Plant Injury	Soluble Salts (mhos X 10^{-5})
VERY LOW	< 25
LOW	26-100
MEDIUM (Sensitive plants may be injured)	101-200
HIGH	201-300
VERY HIGH (Most plants injured)	> 300

DISPLAY OF AVERAGE RESULTS: Line 11 on the report shows the average value for the tested nutrient. The average value for each nutrient is displayed graphically in the center section of the report. This provides an easy to interpret guide to the nutrient status of the soil.

NOTES:

1. Optimum levels of plant nutrients vary with plant type, its use and fertility management level. These factors along with soil test information are used to make specific fertilizer recommendations.
2. To convert pounds of nutrient per acre to parts per million divide reported values by 2.
3. To convert soluble salt values to millimohs (mmohs) divide reported values by 100.
4. Results followed by a "+" are outside the normal test range. Actual values are higher than shown and can be determined upon request.

LIME AND FERTILIZER RECOMMENDATION COMMENTS

CAUTION! To avoid plant injury consult a professional in the turf and ornamentals industry or your County Cooperative Extension Service before using recommended fertilizers or lime.

ALL RECOMMENDATIONS represent a typical amount for the plant type, its use and fertility management level as determined by the sample information provided and the soil test results. Actual fertility management may vary with different cultural practices, i.e. rate and timing of application, nutrient source, application method, etc.

LIME RECOMMENDATIONS are given in pounds per 1,000 sq. ft. (LBS/M) or tons per acre (TON/A) of ground limestone (TNP>90%). Recommendations are for the amount needed to correct acid soil conditions for the specific plant types. Do not over apply lime to established turf areas. Incorporate recommended amounts into the root zone at establishment.

LIME TYPE: When calcium and magnesium tests are performed, the lime type recommended will be indicated as high calcium **(Ca)** or high magnesium/dolomitic lime **(Mg).**

NITROGEN RECOMMENDATIONS are given in lbs. per 1,000 sq. ft. or lbs. per acre of actual nitrogen **(N). APP. FREQ:** Recommendations for application frequency given on a per season **(S)** basis should be split into multiple applications. Recommendations may also be given on a per month **(M)** of growing season or month of establishment basis. When **NEW/ESTB.** is selected as the fertility management level, nutrient recommendations are for incorporation into the soil at the time of planting (preferred) or for surface application during the first three months or more of establishment.

PHOSPHATE RECOMMENDATIONS are given in lbs. per 1,000 sq. ft. or lbs. per acre of P_2O_5. Recommendations are given as the annual requirement for maintenance, if soil test values are adequate to high; the corrective amount, if soil test values are low; or the amount to be used during the establishment phase.

POTASSIUM RECOMMENDATIONS are given in lbs. per 1,000 sq. ft. or lbs. per acre of K_2O. Recommendations are given as the annual requirement for maintenance, if soil test values are adequate to high; the corrective amount, if soil test values are low; or the amount to be used during the establishment phase.

OTHER NUTRIENT RECOMMENDATIONS are given in lbs. per 1,000 sq. ft. or lbs. per acre of elemental magnesium **(Mg)**, iron **(Fe)**, manganese **(Mn)**, or zinc **(Zn)**. Recommendations are given as the corrective amount for maintenance or the amount to be used during the establishment phase. Do not over apply micronutrients.

REPORT TO: JDL014
JOHN DEERE LANDSCAPES 014
5379 WALNUT AVE
DOWNERS GROVE, IL 60515

TURF AND ORNAMENTAL

SOIL TEST AND RECOMMENDATION REPORT

SUBMITTED BY/FOR: VILLAGE OF HINSDALE 84713

10/27/10

CLC LABS®
325 VENTURE DRIVE
WESTERVILLE, OHIO 4308
614-888-1663

REPORT REF. NUMBER	RESULTS OF ANALYSIS						CALCULATED VALUES						RESULTS OF ANALYSIS									
		Soil	Buffer	Pounds per Acre Available Nutrient				Cation Exchange Capacity	% Base Saturation					Pounds per Acre Available Nutrient								
	LAB NO.	pH	pH	P	K	Ca	Mg		K	Ca	Mg	H	Na	Fe	Mn	Zn	Cu					
1	71Z	6.4		17	701	4872	1084	17.6	5.1	69	26											
2																						
3																						
4																						
5																						
6																						
7																						
8																						
9																						
10																						
11	AVERAGE RESULTS →			17	701	4872	1084	17.6	5.1	69	26											

DISPLAY OF AVERAGE RESULTS

SURPLUS		*		*																		
		*		*																		
HIGH		*		*																		
		*		*																		
		*		*							*											
ADEQUATE		*		*							*											
		*	*	*	*	*		*														
		*	*	*	*	*	*	*														
		*	*	*	*	*	*	*														
LOW	*	*	*	*	*	*	*	*														
	*	*	*	*	*	*	*	*														

REPORT REF. NUMBER	SAMPLE INFORMATION				FERTILIZER RECOMMENDATIONS IN LBS. PER 1,000 SQ. FT.								
	SAMPLE IDENTIFICATION	PLANT TYPE	AREA TYPE	FERT/ MAINT. LEVEL	LIME LBS/M	LIME TYPE	NITROGEN	APP. FREQ	P_2O_5	K_2O	Mg		COMMENTS
1	HIGHLAND PARK	COOL SEASON MIX	COMMER. LAWN	MED.			3.5 -4.5	S	2.0	0.0			See All
2													
3													
4													
5													
6													
7													
8													
9													
10													
11	RECOMMENDATIONS FOR AVERAGE RESULTS →						3.5 -4.5	S	2.0	0.0			See All

REPORT TO: ODLO14

JOHN DEERE LANDSCAPES 014
5379 WALNUT AVE
DOWNERS GROVE, IL 60515

SOIL TEST AND RECOMMENDATION REPORT

SUBMITTED BY/FOR: VILLAGE OF HINSDALE 84713

LEC LABS
325 VENTURE DRIVE
WESTERVILLE, OHIO 430
614-888-1663

REPORT REF. NUMBER	RESULTS OF ANALYSIS						CALCULATED VALUES						RESULTS OF ANALYSIS			
	LAB NO.	Soil pH	Buffer pH	Pounds per Acre Available Nutrient P	K	Ca	Mg	Cation Exchange Capacity	% Base Saturation K	Ca	Mg	H	Na	Pounds per Acre Available Nutrient Fe	Mn	Zn	Cu
1	66Z	7.4		58	624	6610	994	21.5	3.7	77	19						
2																	
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	
11	AVERAGE RESULTS →			58	624	6610	994	21.5	3.7	77	19						

DISPLAY OF AVERAGE RESULTS

SURPLUS		*		*								
HIGH		*		*								
		*		*								
		*	*	*								
ADEQUATE		*	*	*								
	*	*	*	*	*		*	*				
	*	*	*	*	*	*	*	*				
LOW	*	*	*	*	*	*	*	*				
	*	*	*	*	*	*	*	*				
	*	*	*	*	*	*	*	*				

REPORT REF. NUMBER	SAMPLE INFORMATION				FERTILIZER RECOMMENDATIONS IN LBS. PER 1,000 SQ. FT.						
	SAMPLE IDENTIFICATION	PLANT TYPE	AREA TYPE	FERT/ MAINT. LEVEL	LIME LBS/M	LIME TYPE	NITROGEN	APP. FREQ	P_2O_5	K_2O	Mg	COMMENTS
1	**BRUSH HILL**	COOL SEASON MIX	COMMER. LAWN	MED.			3.5 -4.5	S	0.5	0.0		See All
2												
3												
4												
5												
6												
7												
8												
9												
10												
11	RECOMMENDATIONS FOR AVERAGE RESULTS →						3.5 -4.5	S	0.5	0.0		See All

REPORT TO: JDLC014
JOHN DEERE LANDSCAPES 014
5379 WALNUT AVE
DOWNERS GROVE, IL 60515

SOIL TEST AND RECOMMENDATION REPORT

SUBMITTED BY/FOR: VILLAGE OF HINSDALE 84713

CLC LABS
325 VENTURE DRIVE
WESTERVILLE, OHIO 43081
614-888-1663

REPORT REF. NUMBER / LAB NO.	RESULTS OF ANALYSIS: Soil pH	Buffer pH	Pounds per Acre Available Nutrient: P	K	Ca	Mg	CALCULATED VALUES: Cation Exchange Capacity	% Base Saturation: K	Ca	Mg	H	Na	RESULTS OF ANALYSIS: Pounds per Acre Available Nutrient: Fe	Mn	Zn	Cu
67Z	7.4		49	572	5851	1043	19.7	3.7	74	22						
AVERAGE RESULTS →			49	572	5851	1043	19.7	3.7	74	22						

DISPLAY OF AVERAGE RESULTS

	P	K	Ca	Mg	Cation Exchange Capacity	K	Ca	Mg	H	Na	Fe	Mn	Zn	Cu
SURPLUS		*		*										
		*		*										
HIGH		*		*										
		*		*										
		*		*										
		*		*				*						
ADEQUATE	*	*	*	*	*		*	*						
	*	*	*	*	*	*	*	*						
	*	*	*	*	*	*	*	*						
LOW	*	*	*	*	*	*	*	*						
	*	*	*	*	*	*	*	*						
	*	*	*	*	*	*	*	*						

REPORT REF. NUMBER / SAMPLE IDENTIFICATION	SAMPLE INFORMATION: PLANT TYPE	AREA TYPE	FERT/ MAINT. LEVEL	LIME LBS/M	LIME TYPE	FERTILIZER RECOMMENDATIONS IN LBS. PER 1,000 SQ. FT.: NITROGEN	APP. FREQ	P_2O_5	K_2O	Mg				COMMENTS
STOUGH PARK	COOL SEASON MIX	COMMER. LAWN	MED.			3.5 -4.5	S	0.5	0.0					See All
RECOMMENDATIONS FOR AVERAGE RESULTS →						3.5 -4.5	S	0.5	0.0					See All

CONTINUED ON REVERSE SIDE

MSDS SHEETS
FOR CHEMICAL PESTICIDES USED IN
THE VILLAGE OF HINSDALE

ST. GABRIEL LABORATORIES

Fast Acting

BurnOut

WEED & GRASS KILLER

CONCENTRATE

The Clearly Natural Choice

For Non-Selective Control of Herbaceous Broadleaf and Grass Weeds in Non-Crop, Right-of-Way, and Industrial Land Sites

ACTIVE INGREDIENTS

Acetic Acid, Ethanoic Acid ($C_2H_2O_2$)..... 25%

Inert Ingredients..... 75%

Total..... 100%

KEEP OUT OF REACH OF CHILDREN

DANGER: See back panel for additional precautionary statements

Net Contents: 1 U.S. Gallon

Fast Acting

BURNOUT

KEEP OUT OF REACH OF CHILDREN

DANGER

STATEMENT OF PRACTICAL TREATMENT

Situated no alcance de los niños, busque a alguien para que se le explique a usted en detalle (If you do not understand the label, find someone to explain it to you in detail).

IF IN EYES: Hold eyelids open and flush with a steady, gentle stream of water for 15 minutes. Get medical attention.

IF SWALLOWED: Call a doctor or get medical attention. Do not induce vomiting. Drink promptly a large quantity of milk, egg whites, gelatin solution or if these are not available, drink large quantities of water. Avoid alcohol.

IF ON SKIN: Wash with plenty of soap and water. Get medical attention if irritation persists.

NOTE TO PHYSICIAN: Probable mucosal damage may contra-indicate the use of gastric lavage.

PRECAUTIONARY STATEMENT

DANGER: Corrosive, causes irreversible eye damage. Harmful if absorbed through skin. Harmful if swallowed. Do not get in eyes, on skin, or on clothing. Wear goggles or face shield when handling. In case of contact, immediately flush eyes or skin with plenty of water. Get medical attention if irritation persists. Wash thoroughly with soap and water after handling. Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Wear goggles or face shields, long sleeve shirts and trousers when handling.

PERSONAL PROTECTION EQUIPMENT (PPE): Applicators and other handlers must wear: Appropriate protective eyewear such as goggles or face shields. Long-sleeved shirt and long pants, waterproof gloves and shoes plus socks. Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions exists for PPE use detergent and hot water. Keep and wash PPE separately from other laundry. If irritation persists. Wash thoroughly with soap and water after handling.

ENVIRONMENTAL HAZARDS: Do not apply to water, or to areas where surface water is present, or to intertidal areas below the mean high water mark. Do not contaminate water by cleaning of equipment or disposal of equipment wash waters.

EPA Registration No. 69836-1-63191
EPA Establishment NO. 063191-VA-1

6 99064 40012 5

DIRECTIONS FOR USE

IT IS A VIOLATION OF FEDERAL LAW TO USE THIS PRODUCT IN A MANNER INCONSISTENT WITH ITS LABELING.

Do not apply this product in a way that will contact workers or other persons either directly or through drift. Only protected handlers may be in area during application. For any requirement specific to your state or tribe, consult the agency responsible for pesticide regulation.

Burnout Weed & Grass Killer is a post emergent foliar active vegetation management product formulated to contain an organic acid. It is non-selective to green foliage and non-residual in soil. Burnout is recommended for the control of herbaceous broadleaf and grassy weeds on non-cropland areas, such as railroad rights-of-way, power stations, industrial sites and driveways; around farm buildings, storage areas and tank farms; in and around greenhouses; around plant nurseries and golf courses; and in fence rows and vacant lots.

Burnout Weed & Grass Killer is fast acting. Foliar contact results in rapid desiccation and control of annual weeds and grasses, and top growth reduction of herbaceous perennial weeds and grasses (See Tables below.) Re-treatment is required for control of established perennial weeds.

FOR EARLY SEASON ANNUAL WEED CONTROL: When weeds are small (3 to 5 leaf) and actively growing, mix a spray solution consisting of 1 gallon of Burnout Weed & Grass Killer for each 3 gallons of water. Ensure adequate mixing. Spray unwanted vegetation to point of wetness.

SPOT TREATMENT APPLICATION: Use a single nozzle or a hand-gun applicator to direct the spray and thoroughly wet undesirable foliage. Retreatment of perennial weed growth will be required for control.

BROADCAST APPLICATION: Can be used for broadcast application. For broadcast applications, use a volume of 75 gallons to 125 gallons/acre. Thorough coverage is necessary to achieve desirable control. For dense populations and heavy foliage, use the higher spray volume to ensure adequate coverage. Apply with flat fan nozzles and sufficient pressure to achieve required coverage.

FOR CONTROL OF LARGER ANNUALS AND BURNDOWN OF PERENNIAL WEED GROWTH: Larger annual weeds and perennials are more difficult to control and may require re-treatment. Treat initially as recommended above and repeat if new growth of leaves appear. Thorough coverage of all foliage is necessary to achieve desirable control.

Best results are achieved from spring/early summer applications to actively growing young weeds. Weeds that are mature, dormant, or hardened due to moisture stress are more tolerant of herbicide treatments. Only contacted vegetation will be affected. Rainfast within one hour of application.

Avoid application to reactive metals such as aluminum, tin, iron, or items such as fencing or lawn furniture in order to prevent staining, mottling, or otherwise interfering with finished metal surfaces. In case of contact, rinse the sprayed surfaces with water. Do not enter or allow entry into treated areas during the restricted entry interval (REI) of 48 hours.

DO NOT APPLY THIS PRODUCT THROUGH ANY TYPE OF IRRIGATION SYSTEM.
NOTE: ALL CONTACTED VEGETATION WILL BE AFFECTED. AVOID CONTACT WITH DESIRABLE PLANTS, OVERSPRAY OR DRIFT WILL INJURE OR KILL CONTACTED VEGETATION.

TYPICAL WEEDS CONTROLLED

ANNUAL BROADLEAF WEEDS	PERENNIAL BROADLEAF WEEDS
Black Medic	Cinquefoil (silvery)
Chickweed	Dandelion
Cinquefoil (rough)	Plantain spp.
Lamb's-quarters	Toadflax
Mustard spp.	Tufted vetch
Oxalis spp.	Wild carrot
Pigweed spp.	PERENNIAL GRASSES
Ragweed spp.	Bluegrass
ANNUAL GRASSES	Quack grass
Crab grass	
Foxtail spp.	

Do not contaminate water, food, or feed by storage or disposal.

STORAGE: Keep from freezing. Store only in original tightly sealed container and out of reach of children.

PESTICIDE DISPOSAL: Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

CONTAINER DISPOSAL: Triple rinse (or equivalent), then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill or by incineration, or if allowed by State and local authorities, by burning. If burned, stay out of smoke.

Packed for **St. Gabriel Laboratories**
14540 John Marshall Hwy.
Gainesville, Virginia 20155
1-800-801-0061
www.milkyspore.com
To reorder call: 800-801-0061

CONDITIONS OF SALE

The label instructions for the use of this product reflect the opinion of experts based on research and field use. The directions are believed to be reliable and should be followed carefully. However, it is impossible to eliminate all risks inherently associated with the use of this product. Crop injury, ineffectiveness or other unintended consequences may result because of such factors as weather conditions, presence of other materials, herbicide-resistant weed populations or the use of, or application of the product contrary to label instructions, all of which are beyond the control of St. Gabriel Laboratories. ALL SUCH RISKS WILL BE ASSUMED BY THE USER. St. Gabriel Laboratories shall not be responsible for losses or damages resulting from the use of this product in any manner not set forth on this label. User assumes all risks associated with the use of this product in any manner not specifically set forth on this label.

St. Gabriel Laboratories warrants only that the material contained herein conforms to the chemical description on the label and is reasonably fit for the use therein described when used in accordance with the directions for use, subject to the risks referred to above. ST. GABRIEL LABORATORIES DOES NOT MAKE OR AUTHORIZE ANY AGENT OR REPRESENTATIVE TO MAKE ANY OTHER WARRANTIES, EXPRESS OR IMPLIED, AND EXPRESSLY EXCLUDES AND DISCLAIMS ALL IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. BUYER'S EXCLUSIVE REMEDY AND St. Gabriel Laboratories EXCLUSIVE LIABILITY SHALL BE LIMITED TO REPAYMENT OF THE PURCHASE PRICE OF THIS PRODUCT. In no case shall St. Gabriel Laboratories or the seller be liable for consequential, special, or indirect damages resulting from the use of this product. The foregoing is a condition of sale by St. Gabriel Laboratories and is accepted as such by the buyer.

Material Safety Data Sheet

May be used to comply with

OSHA's Hazard Communication Standard, 29 CFR 1910.1200. This Standard must be consulted for specific requirements.

U.S. Department of Labor

Occupational Safety and Health Administration
(Non-Mandatory Form)
Form Approved
OMB No. 1218-0072

IDENTITY *(As Used on Label and List)* **ST. Gabriel Laboratories BurnOut II Concentrate** Active ingredient: Clove Oil 12%, Sodium Laurly Sulfate 8% Inert ingredients: Vinegar,Citric Acid, Mineral oil, Lecithin, Water Total inert 80% Total 100%	

Section I

Manufacturer's Name: **St. Gabriel Laboratories**	Emergency Telephone Number **(800) 801-0061 Toll Free**
Address: **14044 Litchfield Drive**	Telephone Number for Information **(540) 672-0866**
Orange, Virginia 22960	Date Prepared April 25, 2003

Section II - Physical/Chemical Characteristics

Boiling Point	**102°C 230 F.**	Specific Gravity (H_2O = 1)	1.05
Vapor Pressure (mm Hg.)		Melting Point	**N/A**
Vapor Density (AIR = 1)		Evaporation Rate (Butyl Acetate = 1)	**>1.0**
Solubility in Water **Complete in all Proportions**			
Appearance and Odor **Milky White**			

Section III - Fire and Explosion Hazard Data

Flash Point (Method Used) **112 Degrees F**	Flammable Limits **Not tested**	LEL **N/A**	UEL **N/A**
Extinguishing Media Foam, Carbon Dioxide, or Dry Chemical extinguishers			
Special Fire Fighting Procedures Self contained breath apparatus.			
Fire and Explosion Hazard: The product is flammable.			
Unusual Fire and Explosion Hazards **NONE**			
Hazardous Decomposition Products: Acid Vapors, Carbon Dioxide, Carbon Monoxide			

Section IV - Reactivity Data

Stability: Reacts with organic and inorganic bases.			Conditions to Avoid: Contact with skin, eyes, or prolong inhalation. Do not ingest product.
Incompatibility: Bases and caustic compounds (alkaline compounds)			
Hazardous Decomposition or Byproducts None			
Hazardous Polymerization Will not occur.			Conditions to Avoid

Section V - Health Hazard Data

Route(s) of Entry:	Inhalation? **Yes**	Skin? **YES**	Ingestion? **YES**
Health Hazards: Contains acetic acid and is flammable and extremely corrosive. Contact with this product will result in severe eye irritation and possible permanent damage. Contact with this product will cause severe skin irritation and/or chemical burns. Breathing vapors will cause significant respiratory irritation, and pulmonary			

edema if prolonged. Ingestion of this product could cause burns and destroy tissue in the mouth, throat, and digestive tract.

Carcinogenicity:	NTP? **N/A**	IARC Monographs? **N/A**	OSHA Regulated? **N/A**

Signs and Symptoms of Exposure

Emergency and First Aid Procedures: Inhalation: Remove person to fresh air. Seek immediate medical assistance.

Ingestion: Seek immediate medical attention. Do not induce vomiting. Vomiting will cause further damage to the mouth and throat. If individual is conscious and alert, immediately rinsing mouth with water and give milk or water to drink. If possible, do not leave individual unattended.

Skin: Immediately flush skin with plenty of water and soap for at least 15 minutes while removing contaminated clothing and shoes. Call a physician immediately. Wash clothing before reuse and discard contaminated shoes.

Eyes: Immediately flush eyes gently with water for at least 15 minutes while holding eyelids apart. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. If symptoms develop as a result of vapor exposure, immediately move individual away from exposure and into fresh air before flushing as recommended above. Call a physician immediately.

Section VI - Precautions for Safe Handling and Use

Steps to Be Taken in Case Material is Released or Spilled: Cover the contaminated surface with sodium bicarbonate or a soda ash/flaked lime mixture (50-50). Mix and add water if necessary to form a slurry. Scoop up slurry and wash site with soda ash solution. Proper mixing procedures are essential. Trained personnel should conduct this procedure. Untrained personnel should be removed from the spilled area.

Waste Disposal Method: A leaking bottle may be placed in a plastic bag and normal disposal procedures followed. Liquid samples may be absorbed using vermiculite or sand, and disposed of in the normal way.
Precautions to Be taken in Handling and Storing Avoid contact with eyes, skin or clothing. Keep bottle/container tightly closed and store in a cool, dry place.
Other Precautions **N/A**

Section VII - Control Measures

Respiratory Protection: Wear a properly fitted half-face or full-face air purifying respirator which is approved for pesticides (NIOSH/MSHA IN U.S.) AND acid gas type cartridges.		
Ventilation: Product for outdoor use only.	Local Exhaust **N/A**	Special **N/A**

Protective Gloves: Wear Neoprene, Nitrile, or natural rubber gloves.	**Eye Protection** Wear chemical googles when handling the product and during application.
Other Protective Clothing or Equipment: Rubber apron is recommended when handling this product. Wear long sleeved shirt, long pants, socks and shoes.	

Section VIII - Special Precautions

Precautions to be taken in Handling and Storing: Keep container tightly closed when not in use. Store only in the original container in a cool, dry place.

The above information is believed to be correct, but does not purport to be all inclusive. This data should be used only as a guide in handling this material. BurnOut II/St. Gabriel Laboratories shall not be held liable for any damage resulting from handling or from direct contact with this product.

Pure Barnyard, Inc.

MATERIAL SAFETY DATA SHEET

SECTION 1 Product and Company Identification

Product Name: Cockadoodle DOO Organic Weed Control—Corn Gluten Meal

Chemical Name: 60% Corn Gluten Meal

Formula: N/A

Manufacturer: on behalf of Pure Barnyard, Inc. 199 Constitution Ave. Portsmouth, NH 03801

For other information Call: 1-603-373-6955 x13

Prepared on: Nov. 6, 2002

SECTION II Ingredients

		OSHA PEL		ACGIHTLV	
Ingredient (s): CAS NO. 66071-96-3					
Corn Gluten Meal	**% by Wt.**	**TWA**	**STEL**	**TWA**	**STEL**
Corn Gluten Meal		Nuisance particulate,	--	Nuisance particulate,	--
CAS NO. 8001-22-7		15 mg/m3 of total dust		10 mg/m3 of total	corn oil

SECTION III Hazard Identifications

Unaware of any hazards for this product. Avoid creating dust or exposing dust to ignition sources.

This material conforms to the Food and Drug Regulations. Since all the materials in this product are classified as feed ingredients, it is exempt from WHMIS. This MSDS is provided as general information for health and safety guidance

SECTION IV Physical/Chemical Characteristics Data

Boiling Point (0F): Not applicable	Specific Gravity (H20=1): Not applicable
Vapor Pressure (mm Hg): Not applicable	Moisture (% by Wt.): 9-12
Vapor Density (Air=1): Not applicable	Evaporation Rate (n-butyl acetate=1): Not applicable
Solubility in Water: Partially Soluable	Appearance and Odor: Goldenrod, slight odor

SECTION V – Fire and Explosion Hazard Data

Flash Point (Method Used)- N/A
Extinguishing Media: Water, Chemical, CO2
Special Fire Fighting Procedures: None
Unusual Fire and Explosion Hazards: Dusts from grain products suspended in air are explosive at criteria air-dust concentrations

SECTION VI – Health Hazard Data

Carcinogenicity:	NTP: No	IARC: No	OSHA: No
Route of Entry:	Ingestions:	Unlikely; Not a Hazard	
	Inhalation:	As dust	
	Skin:	Not a Hazard	
	Eyes:	Contact may cause temporary mild irritation.	
Effects of Overexposure:			
Acute	Ingestion:	Not a hazard in normal industrial use.	
	Inhalation:	Not a hazard	
	Skin:	Not a hazard	
	Eyes:	Contact may cause temporary mild irritation.	
Chronic	Ingestion:	Not a hazard in normal industrial use.	
	Inhalation:	Not a hazard	
	Skin:	Not a hazard	
	Eyes:	Contact may cause temporary mild irritations.	
Emergency and First Aid Procedures:	Ingestions:	Get medical attention for individuals who ingest large amounts.	
	Inhalation:	Remove to fresh air	
	Skin	Wash with water	
	Eyes	Wash with water	

Nufarm

For Chemical Emergency, Spill, Leak, Fire, Exposure, or Accident,
Call CHEMTREC Day or Night: 1-800-424-9300.
For Medical Emergencies Only, Call 1-877-325-1840.

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: Tri-Power® Selective Herbicide
Synonyms: Herbicide Mixture of MCPA, Mecoprop-p (MCPP-p) and Dicamba
EPA Reg. No.: 228-262

Company Name: Nufarm Americas Inc.
150 Harvester Drive, Suite 200
Burr Ridge, IL 60527

Date of Issue: May 15, 2006 **Supersedes:** December 11, 2001
Sections Revised: All - new ANSI format

2. HAZARDS IDENTIFICATION

Emergency Overview:
Appearance and Odor: Dark amber colored liquid with slight ammonia odor.
Warning Statements: Keep out of reach of children. DANGER. Corrosive. Concentrate causes irreversible eye damage. Harmful or fatal if swallowed. Harmful if inhaled. Avoid breathing spray mist. Do not get in eyes, on skin or on clothing.

Potential Health Effects:
Likely Routes of Exposure: Inhalation, eye and skin contact.
Eye Contact: Direct or prolonged eye exposure to the concentrated product may cause irreversible eye damage.
Skin Contact: Slightly toxic and minimally irritating based on toxicity studies. Overexposure by skin absorption may cause symptoms similar to those for ingestion.
Ingestion: Harmful if swallowed. May cause nausea, vomiting, abdominal pain, decreased blood pressure, muscle weakness, muscle spasms.
Inhalation: Harmful if inhaled. May cause symptoms similar to those from ingestion.
Medical Conditions Aggravated by Exposure: Inhalation of product may aggravate existing chronic respiratory problems such as asthma, emphysema or bronchitis. Skin contact may aggravate existing skin disease.

See Section 11: TOXICOLOGICAL INFORMATION for more information.

Potential Environmental Effects:
Drift or runoff may adversely affect non-target plants.

See Section 12: ECOLOGICAL INFORMATION for more information.

3. COMPOSITION / INFORMATION ON INGREDIENTS

COMPONENT	CAS NO.	% BY WEIGHT
Dimethylamine Salt of 2-Methyl-4-Chlorophenoxyacetic Acid	2039-46-5	40.42
Dimethylamine Salt of (+)-R-2-(2-Methyl-4-Chlorophenoxy) propionic Acid	66423-09-4	7.99
Dimethylamine Salt of Dicamba (3,6-Dichloro-o-Anisic Acid)	2300-66-5	3.97
Other Ingredients		47.62

4. FIRST AID MEASURES

If Swallowed: Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the poison control center or doctor. Do not give anything by mouth to an unconscious person.
If on Skin: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15 to 20 minutes. Call a poison control center or doctor for treatment advice.
If Inhaled: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible. Call a poison control center or doctor for further treatment advice.
If in Eyes: Hold eye open and rinse slowly and gently with water for 15 to 20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

5. FIRE FIGHTING MEASURES

Flash Point: Not applicable due to aqueous formulation
Autoignition Temperature: Not determined **Flammability Limits:** Not determined

Extinguishing Media: Recommended for large fires: foam or water spray. Recommended for small fires: dry chemical or carbon dioxide.
Special Fire Fighting Procedures: Firefighters should wear NIOSH/MSHA approved self-contained breathing apparatus and full fire-fighting turn out gear. Dike area to prevent runoff and contamination of water sources. Dispose of fire control water later.
Unusual Fire and Explosion Hazards: If water is used to fight fire, contain runoff, using dikes to prevent contamination of water supplies. Dispose of fire control water later.
Hazardous Decomposition Materials (Under Fire Conditions): May produce gases such as hydrogen chloride and oxides of carbon and nitrogen.

National Fire Protection Association (NFPA) Hazard Rating:
Rating for this product: Health: 2 **Flammability:** 1 **Reactivity:** 0
Hazards Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions: Wear appropriate protective gear for the situation. See Personal Protection information in Section 8.
Environmental Precautions: Prevent material from entering public sewer systems or any waterways. Do not flush to drain. Large spills to soil or similar surfaces may necessitate removal of topsoil. The affected area should be removed and placed in an appropriate container for disposal.
Methods for Containment: Dike spill using absorbent or impervious materials such as earth, sand or clay. Collect and contain contaminated absorbent and dike material for disposal.
Methods for Cleanup and Disposal: Pump any free liquid into an appropriate closed container. Collect washings for disposal. Decontaminate tools and equipment following cleanup. See Section 13: DISPOSAL CONSIDERATIONS for more information.
Other Information: Large spills may be reportable to the National Response Center (800-424-8802) and to state and/or local agencies.

7. HANDLING AND STORAGE

Handling:
Avoid breathing spray mist. Do not get in eyes or on clothing. Users should wash hands before eating, drinking, chewing gum, using tobacco or using the toilet. Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.

Storage:
Always store pesticides in a secured warehouse or storage building. Store at temperatures above 32°F. If allowed to freeze, remix before using. This does not alter the product. Containers should be opened in well-ventilated areas. Keep container tightly sealed when not in use. Do not stack cardboard cases more than two pallets high. Do not store near open containers of fertilizer, seed, or other pesticides. Do not contaminate water, food or feed by storage or disposal.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering Controls:
Where engineering controls are indicated by specific use conditions or a potential for excessive exposure, use local exhaust ventilation at the point of generation.

Personal Protective Equipment:
Eye/Face Protection: To avoid contact with eyes, wear face shield or goggles when mixing and loading this product. An emergency eyewash or water supply should be readily accessible to the work area.
Skin Protection: To avoid contact with skin, wear long pants, long-sleeved shirt, socks, shoes and chemical-resistant gloves. An emergency shower or water supply should be readily accessible to the work area.
Respiratory Protection: Not normally required. If vapors or mists exceed acceptable levels, wear NIOSH approved air-purifying respirator with cartridges/canisters approved for use against pesticides.
General Hygiene Considerations: Personal hygiene is an important work practice exposure control measure and the following general measures should be taken when working with or handling this material: 1) do not store, use and/or consume foods, beverages, tobacco products, or cosmetics in areas where this material is stored; 2) wash hands and face carefully before eating, drinking, using tobacco, applying cosmetics or using the toilet.

Exposure Guidelines:

	OSHA		ACGIH		
Component	TWA	STEL	TWA	STEL	Unit
DMA Salt of MCPA	NE	NE	NE	NE	
DMA Salt of Mecoprop-p	NE	NE	NE	NE	
DMA Salt of Dicamba	NE	NE	NE	NE	

NE = Not Established

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance and Odor: Dark amber colored liquid with slight ammonia odor.

Boiling Point:	Not determined	**Solubility in Water:**	Soluble
Density:	9.4 pounds/gallon	**Specific Gravity:**	1.13 @ 20°C
Evaporation Rate:	Not determined	**Vapor Density:**	Not determined
Freezing Point:	32°F (0°C)	**Vapor Pressure:**	Not determined
pH:	7.5 – 8.5	**Viscosity:**	30.16 cps @25°C

Note: Physical data are typical values, but may vary from sample to sample. A typical value should not be construed as a guaranteed analysis or as a specification.

10. STABILITY AND REACTIVITY

Chemical Stability: This material is stable under normal handling and storage conditions.
Conditions to Avoid: Excessive heat. Do not store near heat or flame.
Incompatible Materials: Strong oxidizing agents: bases and acids.
Hazardous Decomposition Products: Under fire conditions, may produce gases such as hydrogen chloride and oxides of carbon and nitrogen.

Hazardous Reactions: Hazardous polymerization will not occur.

11. TOXICOLOGICAL INFORMATION

Toxicological Data:
Data from laboratory studies on this product are summarized below:

Oral: Rat LD_{50}: 1,400 mg/kg; FIFRA Category III
Dermal: Rabbit LD_{50}: >2,000 mg/kg; FIFRA Category III
Inhalation: Rat 4-hr LC_{50}: > 0.23 mg/l; FIFRA Category II
Eye Irritation: Rabbit: Severely irritating/corrosive; FIFRA Category I
Skin Irritation: Rabbit: Slightly irritating; FIFRA Category IV
Skin Sensitization: Not a contact sensitizer in guinea pigs following repeated skin exposure.

Subchronic (Target Organ) Effects: Repeated overexposure to phenoxy herbicides may cause effects to liver, kidneys, blood chemistry, and gross motor function. Rare cases of peripheral nerve damage have been reported, but extensive animal studies have failed to substantiate these observations, even at high doses for prolonged periods. Repeated overexposure to dicamba may cause liver changes or a decrease in body weight.
Carcinogenicity / Chronic Health Effects: The International Agency for Research on Cancer (IARC) lists exposure to chlorophenoxy herbicides as a class 2B carcinogen, the category for limited evidence for carcinogenicity in humans. However, newer MCPA rat and mouse lifetime feeding studies, as well as a more current MCPP lifetime feeding study in rats, did not show carcinogenic potential. Dicamba did not cause cancer in long-term animals studies. The U.S. EPA has given dicamba a Class D classification (not classifiable as to human carcinogenicity).
Reproductive Toxicity: MCPA studies in laboratory animals have shown testicular effects and lower male fertility. No impairment of reproductive function attributable to MCPP has been noted in laboratory animal studies. Dicamba did not interfere with fertility in reproduction studies in laboratory animals.
Developmental Toxicity: MCPA and MCPP studies in laboratory animals have shown decreased fetal body weights and delayed development in the offspring at doses toxic to mother animals. Animal tests with dicamba have not demonstrated developmental effects.
Genotoxicity: There have been some positive and some negative studies, but the weight of evidence is that neither MCPA nor MCPP is mutagenic. Animal tests with dicamba did not demonstrate mutagenic effects.

Assessment Carcinogenicity:
This product contains substances that are considered to be probable or suspected human carcinogens as follows:

	Regulatory Agency Listing As Carcinogen			
Component	ACGIH	IARC	NTP	OSHA
Chlorophenoxy Herbicides	No	2B	No	No

See Section 2: HAZARDS IDENTIFICATION for more information.

12. ECOLOGICAL INFORMATION

Ecotoxicity:
Data on MCPA DMA:

96-hour LC_{50} Bluegill:	>310 mg/l	Bobwhite Quail Oral LD_{50}:	390 mg/kg
96-hour LC_{50} Rainbow Trout:	230 mg/l	Mallard Duck 8-day Dietary LC_{50}:	>5,620 ppm
48-hour EC_{50} Daphnia:	190 mg/l		

Data on Mecoprop-p:

96-hour LC_{50} Bluegill:	>100 mg/l (literature)
48-hour EC_{50} Daphnia:	>270 mg/l (literature)
72-hour EC_{50} Green Algae:	>270 mg/l (literature)

Data on Dicamba:

96-hour LC_{50} Bluegill:	135 mg/l	Bobwhite Quail 8-day Dietary LC_{50}:	>10,000 ppm
96-hour LC_{50} Rainbow Trout:	135 mg/l	Mallard Duck 8-day Dietary LC_{50}:	>10,000 ppm
48-hour EC_{50} Daphnia:	110 mg/l		

Environmental Fate:
MCPA DMA rapidly dissociates to parent MCPA in the environment. In soil, MCPA is microbially degraded with a typical half-life of approximately 10 to 14 days. Mecoprop-p DMA rapidly dissociates to parent mecoprop-p in the environment. In soil, mecoprop-p is microbially degraded with a typical half-life of approximately 11 to 15 days. Dicamba has low bioaccumulation potential, is not persistent in soil, is highly mobile in soil and degrades rapidly.

13. DISPOSAL CONSIDERATIONS

Waste Disposal Method:
Pesticide wastes are acutely hazardous. If container is damaged or if pesticide has leaked, contain all spillage. Absorb and clean up all spilled material with granules or sand. Place in a closed, labeled container for proper disposal. Improper disposal of excess pesticide, spray mixtures, or rinsate is a violation of Federal law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

Container Handling and Disposal:
Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by other procedures approved by State and local authorities. Plastic containers are also disposable by incineration, or if allowed by state and local authorities, by burning. If burned, stay out of smoke.

14. TRANSPORTATION INFORMATION

Follow the precautions indicated in Section 7: HANDLING AND STORAGE of this MSDS.

For Department of Transportation (DOT) regulatory information, if required, consult transportation regulations, product shipping papers or call Nufarm's DOT Manager at 708-755-2104, Monday through Friday, 8:00 AM to 5:00 PM Central Time.

15. REGULATORY INFORMATION

U.S. Federal Regulations:

TSCA Inventory: This product is exempted from TSCA because it is solely for FIFRA regulated use.

SARA Hazard Notification/Reporting:
Hazard Categories Under Criteria of SARA Title III Rules (40 CFR Part 370):
Immediate, Delayed

Section 313 Toxic Chemical(s):
Dicamba (CAS No. 1918-00-9), 3.30% equivalent by weight in product

Reportable Quantity (RQ) under U.S. CERCLA:
Dicamba (CAS No. 1918-00-9) 1,000 pounds

RCRA Waste Code:
None

State Information:
Other state regulations may apply. Check individual state requirements.

California Proposition 65: Not Listed.

16. OTHER INFORMATION

This Material Safety Data Sheet (MSDS) serves different purposes than and DOES NOT REPLACE OR MODIFY THE EPA-ACCEPTED PRODUCT LABELING (attached to and accompanying the product container). This MSDS provides important health, safety and environmental information for employers, employees, emergency responders and others handling large quantities of the product in activities generally other than product use, while the labeling provides that information specifically for product use in the ordinary course.

Use, storage and disposal of pesticide products are regulated by the EPA under the authority of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) through the product labeling, and all necessary and appropriate precautionary, use, storage, and disposal information is set forth on that labeling. It is a violation of Federal law to use a pesticide product in any manner not prescribed on the EPA-accepted label.

Although the information and recommendations set forth herein (hereinafter "Information") are presented in good faith and believed to be correct as of the date hereof, Nufarm Americas Inc. makes no representations as to the completeness or accuracy thereof. Information is supplied upon the condition that the persons receiving same will make their own determination as to its suitability for their purposes prior to use. In no event will Nufarm Americas Inc. be responsible for damages of any nature whatsoever resulting from the use of or reliance upon Information. NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OF ANY OTHER NATURE ARE MADE HEREUNDER WITH RESPECT TO INFORMATION OR THE PRODUCT TO WHICH INFORMATION REFERS.

Tri-Power is a registered trademark of Nufarm Americas Inc.

Bentgrass Turf (Other Than Golf Course Greens and Tees): On closely mowed bentgrass, apply Tri-Power at a maximum rate of 2 ½ pints per acre (0.9 fluid ounces in 3 gallons of water per 1,000 square feet) in May or mid-August through September when weeds are actively growing. Exercise care when applying to avoid overdosing bentgrass, or turf injury may result. Slight turf yellowing should disappear after about 1 week.

NOTE

Care should be taken to avoid overdosing Bentgrass, St. Augustine, and Centipede grasses or injury may result. Large volumes of spray water will aid in obtaining uniform coverage. If hand-type sprayers are used, it is preferable to use a single nozzle sprayer rather than a multiple nozzle boom as sideways application with a boom where the spray from more than one nozzle is allowed to fall on the same area will result in heavy local over-application and subsequent turf discoloration or injury.

Herbi™ Controlled Droplet Applicator: For Cool Season Grasses—Add 1 ⅔ to 2 ½ pints of Tri-Power to the 5 pint Herbi bottle, then fill with water to make 5 pints of mixture or substitute ½ pint of a surfactant for water while agitating the solution. For Listed Warm Season Grasses—Apply 1 ¼ to 1 ⅔ pints of Tri-Power, then add water to make total of 5 pints of mixture. While walking at approximately 1 pace (3 feet) per second, spray entire contents over 33,000 square feet (¾ of an acre). Do not overlap (double coverage) at edge of spray patterns. Reduced rates (use ½ of rate shown above) of Tri-Power must be applied when grass is stressed from heat, drought, etc.

Herbi™ is a trademark of North American Micron.

Controlled Droplet Applicators:—(CDA), Atomizers, and Spinning Disk Applicators: For Cool Season Grasses—Use Tri-Power at the rate of 2 ½ to 3 ½ pints per acre (0.9 to 1.25 fluid ounces per 1,000 square feet) in sufficient water to assure coverage (1 to 4 gallons of water per acre is normal for this type of equipment).

For Listed Warm Season Grasses—Use 2 to 3 pints of Tri-Power per acre (0.7 to 1.1 fluid ounces per 1,000 square feet) in sufficient water to assure coverage (1 to 4 gallons of water per acre is normal for this type of equipment).

NOTE: For all grasses (1) Do not overlap spray patterns, (2) Use reduced rates if grass is stressed from heat, drought, etc., and (3) Follow CDA equipment spray instructions.

OTHER NON-CROP AREAS

Roadsides (Including Aprons and Guard Rails), Rights-of-Way, and Other Similar Non-Crop Areas: For the control of broadleaf weeds, mix at a rate of ¼ to ¾ gallon of Tri-Power per 50 to 300 gallons of water. This mixture will cover 43,500 square feet. Thoroughly saturate all weeds with spray mixture. Apply any time between the time when plants come into full leaf (Spring) to when the plants begin to go dormant. Best results are obtained when weeds are young and actively growing. Do not cut weeds until herbicide has translocated throughout the plant causing root death. For small broadleaf weeds, use the lower rate. Heavy, dense stands require the higher rate of 3 ounces of Tri-Power per gallon of water and spray to thoroughly wet all foliage.

For Control of Woody Plants: Apply to both stems and foliage any time from the time foliage is completely matured until the time plants start to go dormant. All leaves, stems and suckers must be completely wet to the ground line for effective control. Regrowth may be anticipated on the more resistant species. Add ⅔ gallons of Tri-Power to 100 gallons of water applying 200 to 600 gallons of spray mixture per 43,500 square feet depending upon the height and thickness of the brush. Mix thoroughly before spraying.

STORAGE AND DISPOSAL

STORAGE: Always store pesticides in a secured warehouse or storage building. Do not store near seeds, fertilizers, insecticides or fungicides. Store at temperatures above 32°F. If allowed to freeze, remix before using. This does not alter this product. Containers should be opened in well ventilated areas. Keep container tightly sealed when not in use. Do not stack cardboard cases more than two pallets high. Do not contaminate water, food or feed by storage or disposal.

PESTICIDE DISPOSAL: Pesticide wastes are acutely hazardous. If container is damaged or if pesticide has leaked, contain all spillage. Absorb and clean up all spilled material with granules or sand. Place in a closed labeled container for proper disposal. Improper disposal of excess pesticide, spray mixtures, or rinsate is a violation of Federal law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

CONTAINER DISPOSAL: Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by other procedures approved by State and local authorities. Plastic containers are also disposable by incineration, or if allowed by State and local authorities, by burning. If burned, stay out of smoke.

WARRANTY

Riverdale warrants that this herbicide conforms to the chemical description on its label. When used in accordance with label directions under normal conditions, this herbicide is reasonably fit for its intended purposes. Since timing, method of application, weather, plant and soil conditions, mixtures with other chemicals and factors affecting the use of this product are beyond our control, no warranty is given concerning the use of this product contrary to label directions or under conditions which are abnormal or not reasonably foreseeable. The user assumes all risks of any such use.

(PR938&11 042194/RV 101698A)

Arbotect® 20-S

Fungicide

For Dutch Elm Disease and Sycamore Anthracnose

Active Ingredient:
Thiabendazole (CAS No. 148-79-8)
(equivalent to 20% 2-(4-thiazolyl) benzimidazole) 26.6%
Other Ingredients: 73.4%

Total: 100.0%

KEEP OUT OF REACH OF CHILDREN.

CAUTION

See additional precautionary statements and directions for use inside booklet.

EPA Reg. No. 100-892
EPA Est. 39578-TX-1
Product of India
Formulated in the USA
SCP 892A-L1G 0503
1 gallon
Net Contents

syngenta

FIRST AID

If on skin or clothing	• Take off contaminated clothing. • Rinse skin immediately with plenty of water for 15-20 minutes. • Call a poison control center or doctor for treatment advice.
If in eyes	• Hold eye open and rinse slowly and gently with water for 15-20 minutes. • Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. • Call a poison control center or doctor for treatment advice.
If swallowed	• Call a poison control center or doctor immediately for treatment advice. • Do not give any liquid to the person. • Do not induce vomiting unless told to do so by the poison control center or doctor. • Do not give anything by mouth to an unconscious person.
Have the product container or label with you when calling a poison control center or doctor, or going for treatment.	
HOT LINE NUMBER For 24 Hour Medical Emergency Assistance (Human or Animal) or Chemical Emergency Assistance (Spill, Leak, Fire, or Accident), Call 1-800-888-8372	

PRECAUTIONARY STATEMENTS

Hazards to Humans and Domestic Animals

CAUTION

Harmful if swallowed. May irritate skin. Avoid contact with skin or eyes.

Environmental Hazards

Do not apply directly to water, or to areas where surface water is present, or to intertidal areas below the mean high water mark. Do not contaminate water by cleaning of equipment or disposal of wastes.

CONDITIONS OF SALE AND LIMITATION OF WARRANTY AND LIABILITY

NOTICE: Read the entire Directions for Use and Conditions of Sale and Limitation of Warranty and Liability before buying or using this product. If the terms are not acceptable, return the product at once, unopened, and the purchase price will be refunded.

The Directions for Use of this product should be followed carefully. It is impossible to eliminate all risks inherently associated with the use of this product. Crop injury, ineffectiveness, or other unintended consequences may result because of such factors as manner of use or application, weather or crop conditions, presence of other materials or other influencing factors in the use of the product, which are beyond the control of SYNGENTA CROP PROTECTION, Inc. or Seller. All such risks shall be assumed by Buyer and User, and Buyer and User agree to hold SYNGENTA and Seller harmless for any claims relating to such factors.

SYNGENTA warrants that this product conforms to the chemical description on the label and is reasonably fit for the purposes stated in the Directions for Use, subject to the inherent risks referred to above, when used in accordance with directions under normal use conditions. This warranty does not extend to the use of the product contrary to label instructions, or under abnormal conditions or under conditions not reasonably foreseeable to or beyond the control of Seller or SYNGENTA, and Buyer and User assume the risk of any such use. SYNGENTA MAKES NO WARRANTIES OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE NOR ANY OTHER EXPRESS OR IMPLIED WARRANTY EXCEPT AS STATED ABOVE.

In no event shall SYNGENTA or Seller be liable for any incidental, consequential or special damages resulting from the use or handling of this product. **THE EXCLUSIVE REMEDY OF THE USER OR BUYER, AND THE EXCLUSIVE LIABILITY OF SYNGENTA AND SELLER FOR ANY AND ALL CLAIMS, LOSSES, INJURIES OR DAMAGES (INCLUDING CLAIMS BASED ON BREACH OF WARRANTY, CONTRACT, NEGLIGENCE, TORT, STRICT LIABILITY OR OTHERWISE) RESULTING FROM THE USE OR HANDLING OF THIS PRODUCT, SHALL BE THE RETURN OF THE PURCHASE PRICE OF THE PRODUCT OR, AT THE ELECTION OF SYNGENTA OR SELLER, THE REPLACEMENT OF THE PRODUCT.**

SYNGENTA and Seller offer this product, and Buyer and User accept it, subject to the foregoing Conditions of Sale and Limitation of Warranty and Liability, which may not be modified except by written agreement signed by a duly authorized representative of SYNGENTA.

DIRECTIONS FOR USE

It is a violation of federal law to use this product in a manner inconsistent with its labeling.

STORAGE AND DISPOSAL

Prohibitions

Do not contaminate water, food, or feed by storage or disposal. Open dumping is prohibited.

Pesticide Storage

Store in original containers only. Keep container closed when not in use. Do not store near food or feed.

Pesticide Disposal

Pesticide, spray mixture, or rinsate that cannot be used according to label instructions must be disposed of according to federal, state, or local procedures under the Resource Conservation and Recovery Act.

Container Disposal

Do not reuse container. Triple rinse (or equivalent), then puncture and dispose of in a sanitary landfill or alternatives allowed by State and local authorities.

For minor spills, leaks, etc., follow all precautions indicated on this label and clean up immediately. Take special care to avoid contamination of equipment and facilities during cleanup procedures and disposal of wastes. In the event of a major spill, fire, or other emergency, call 1-800-888-8372, day or night.

APPLICATION PROCEDURES

Elm Trees—1 Year Treatment—Aids in the Control of Dutch Elm Disease

Preventive Treatment—For each 5 inches of trunk diameter, inject 1 fl. oz. of Arbotect® 20-S in 40 fl. oz. (1¼ qts.) of water to 2 fl. oz. of Arbotect 20-S in 80 fl. oz. (2½ qts.) of water. Use the higher levels of Arbotect 20-S under high disease pressure situations.

Preventive applications should be made when leaves approach full size, usually in late May or June.

Therapeutic Treatment—For each 5 inches of trunk diameter, inject 2 fl. oz. of Arbotect 20-S in 80 fl. oz. (2½ qts.) of water to 4 fl. oz. of Arbotect 20-S in 160 fl. oz. of water. Use the higher levels of Arbotect 20-S under high disease pressure situations.

Therapeutic applications should be made as soon as the current year infections are seen, usually in late June through August.

For optimum disease control, preventive treatment is recommended. When a tree shows more than 5% crown symptoms, treatment may not be effective. Treatment should be used in conjunction with an insect control and sanitation program (pruning of diseased limbs) in order to obtain best results. Trees that are 5 inches or less in diameter at chest height should not be treated.

Place injection sites as near to ground level as possible at 3 to 10-inch intervals around the trunk with a maximum hole diameter of ½ inch using a minimum of 3 or 4 equally spaced injection points per tree.

Elm Trees—3 Year Treatment—For Preventive and Therapeutic Treatment of Dutch Elm Disease

Inject 12 fl. oz. of Arbotect 20-S for each 5 inches of trunk diameter. Dilute each 2.0 fl. oz. of Arbotect 20-S with 1 gal. of water. Inject into any exposed root flares, below ground, once every three years. The maximum diameter of the injection holes should be ½ inch. Do not use this treatment if trees are less than 10 inches in diameter. When a tree shows more than 5% crown symptoms, treatment may not be effective. Treatment should be used in conjunction with an insect control and sanitation program (pruning of diseased limbs) in order to obtain best results.

Sycamore Trees—Aids in the Control of Sycamore Anthracnose

For each 5 inches of trunk diameter, inject 4 fl. oz. of Arbotect 20-S diluted with 80-160 fl. oz. of water (one part Arbotect 20-S to between 20 and 40 parts of water).

For best results, injections should be made in late summer or early fall, in each of two consecutive years. Repeat treatments may be necessary if the disease reappears.

Place injection sites at 3 to 10-inch intervals around the trunk with a maximum hole diameter of ½ inch using a minimum of 3 or 4 equally spaced injection points per tree. Injection sites may be placed in root flares at or below ground level or in the trunk as near to ground level as possible. Trees that are 5 inches or less in diameter at chest height should not be treated. If pressure injection is to be used, do not exceed 100 psi.

Do not dilute Arbotect 20-S with highly alkaline water as a precipitate may form.

Arbotect 20-S is to be used by trained arborists and others trained in injection techniques and in the identification of Dutch elm disease and sycamore anthracnose.

For non-emergency (e.g., current product information), call Syngenta Crop Protection at 1-800-334-9481.

Syngenta Crop Protection, Inc.
Greensboro, North Carolina 27409
www.syngenta-us.com
SCP 892A-L1G 0503

syngenta

MATERIAL SAFETY DATA SHEET

Syngenta Crop Protection, Inc.
Post Office Box 18300
Greensboro, NC 27419

In Case of Emergency, Call
1-800-888-8372

1. PRODUCT IDENTIFICATION

Product Name: **ARBOTECT 20-S**

Product No.: A10345A

EPA Signal Word: Caution

Active Ingredient(%): Thiabendazole (26.6%)

CAS No.: 148-79-8

Chemical Name: 1H-Benzimidazole, 2-(4-thiazolyl)-

Chemical Class: Benzimidazole Fungicide

EPA Registration Number(s): 100-892

Section(s) Revised: 2, 3, 8, 11, 15, 16

2. COMPOSITION/INFORMATION ON INGREDIENTS

Material	OSHA PEL	ACGIH TLV	Other	NTP/IARC/OSHA Carcinogen
Hypophosphorus Acid (50% Solution)	Not Established	Not Established	Not Established	No
Thiabendazole (26.6%)	Not Established	Not Established	10 mg/m³ TWA ***	No

*** Syngenta Occupational Exposure Limit (OEL)

Ingredients not precisely identified are proprietary or non-hazardous. Values are not product specifications.
Syngenta Hazard Category: B, S

3. HAZARDS IDENTIFICATION

Symptoms of Acute Exposure

May cause mild skin irritation.

Hazardous Decomposition Products

Can decompose at high temperatures forming toxic gases.

Physical Properties

Appearance: Yellow orange liquid

Odor: Weak, like hydrogen sulfide

Unusual Fire, Explosion and Reactivity Hazards

During a fire, irritating and possibly toxic gases may be generated by thermal decomposition or combustion.

4. FIRST AID MEASURES

Have the product container, label or Material Safety Data Sheet with you when calling Syngenta (800-888-8372), a poison contol center or doctor, or going for treatment.

Ingestion: If swallowed: Call Syngenta (800-888-8372), a poison control center or doctor immediately for treatment advice. Have the person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so after calling 800-888-8372 or by a poison control center or doctor. Do not give anything by mouth to an unconscious person.

Eye Contact: If in eyes: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after 5 minutes, then continue rinsing eye. Call Syngenta (800-888-8372), a poison control center

or doctor for treatment advice.

Skin Contact: If on skin or clothing: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call Syngenta (800-888-8372), a poison control center or doctor for treatment advice.

Inhalation: If inhaled: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call Syngenta (800-888-8372), a poison control center or doctor for further treatment advice.

Notes to Physician

There is no specific antidote if this product is ingested.

Treat symptomatically.

Medical Condition Likely to be Aggravated by Exposure

None known.

5. FIRE FIGHTING MEASURES

Fire and Explosion

Flash Point (Test Method):	Not Available	
Flammable Limits (% in Air):	Lower: % Not Applicable	Upper: % Not Applicable
Autoignition Temperature:	Not Available	
Flammability:	Not Applicable	

Unusual Fire, Explosion and Reactivity Hazards

During a fire, irritating and possibly toxic gases may be generated by thermal decomposition or combustion.

In Case of Fire

Use dry chemical, foam or CO2 extinguishing media. Wear full protective clothing and self-contained breathing apparatus. Evacuate nonessential personnel from the area to prevent human exposure to fire, smoke, fumes or products of combustion. Prevent use of contaminated buildings, area, and equipment until decontaminated. Water runoff can cause environmental damage. If water is used to fight fire, dike and collect runoff.

6. ACCIDENTAL RELEASE MEASURES

In Case of Spill or Leak

Control the spill at its source. Contain the spill to prevent from spreading or contaminating soil or from entering sewage and drainage systems or any body of water. Clean up spills immediately, observing precautions outlined in Section 8. Cover entire spill with absorbing material and place into compatible disposal container. Scrub area with hard water detergent (e.g. commercial products such as Tide, Joy, Spic and Span). Pick up wash liquid with additional absorbent and place into compatible disposal container. Once all material is cleaned up and placed in a disposal container, seal container and arrange for disposition.

7. HANDLING AND STORAGE

Store the material in a well-ventilated, secure area out of reach of children and domestic animals. Do not store food, beverages or tobacco products in the storage area. Prevent eating, drinking, tobacco use, and cosmetic application in areas where there is a potential for exposure to the material. Wash thoroughly with soap and water after handling.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

THE FOLLOWING RECOMMENDATIONS FOR EXPOSURE CONTROLS/PERSONAL PROTECTION ARE INTENDED FOR THE MANUFACTURE, FORMULATION, PACKAGING AND USE OF THIS PRODUCT.

FOR COMMERCIAL APPLICATIONS AND/OR ON-FARM APPLICATIONS CONSULT THE PRODUCT LABEL.

Ingestion: Prevent eating, drinking, tobacco usage and cosmetic application in areas where there is a potential for exposure to the material. Wash thoroughly with soap and water after handling.

Eye Contact: Where eye contact is likely, use chemical splash goggles.

Skin Contact: Where contact is likely, wear chemical-resistant (such as nitrile or butyl) gloves, coveralls, socks and chemical-resistant footwear. For overhead exposure, wear chemical-resistant headgear.

Inhalation: A respirator is not normally required when handling this substance. Use effective engineering controls to comply with occupational exposure limits.

In case of emergency spills, use a NIOSH approved respirator with any N, R, P or HE filter.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Yellow orange liquid
Odor:	Weak, like hydrogen sulfide
Melting Point:	Not Applicable
Boiling Point:	212°F
Specific Gravity/Density:	1.10 @ 77°F (25°C)
pH:	2.7 (1% suspension in water)

Solubility in H2O

Thiabendazole: 30mg/l (pH 7, pH 10) @ 68°F in water

Vapor Pressure

Thiabendazole: 4.0 x 10(-9) mmHg @ 77°F (25°C)

10. STABILITY AND REACTIVITY

Stability:	Stable under normal use and storage conditions.
Hazardous Polymerization:	Will not occur.
Conditions to Avoid:	None known.
Materials to Avoid:	Oxidizing agents (e.g., chlorates, nitrates)
Hazardous Decomposition Products:	Can decompose at high temperatures forming toxic gases.

11. TOXICOLOGICAL INFORMATION

Acute Toxicity/Irritation Studies (Finished Product)

Ingestion:	Practically Non-Toxic	
	Oral (LD50 Rat) :	> 5,000 mg/kg body weight
Dermal:	Practically Non-Toxic	
	Dermal (LD50 Rat) :	> 5,050 mg/kg body weight
Inhalation:	Not Available	
	Inhalation (LC50 Rat) :	Not Available
Eye Contact:	Non-Irritating (Rabbit)	
Skin Contact:	Practically Non-Irritating (Rabbit)	
Skin Sensitization:	Not a Sensitizer (Guinea Pig)	

Reproductive/Developmental Effects

Thiabendazole: Decreased fetal weights and increased invidence of resorptions observed in dose levels that were maternally toxic. An increase in skeletal defects and cleft palate was observed in fetuses of mice.

Chronic/Subchronic Toxicity Studies

Thiabendazole: Increased incidence of anemia and changes in the thyroid, liver, spleen, kidney and gall bladder in rats and dogs.

Carcinogenicity

Thiabendazole: None observed.

Other Toxicity Information

None

Toxicity of Other Components

Hypophosphorus Acid (50% Solution)

Test results reported in Section 11 for the final product take into account any acute hazards related to the hypophosphorus acid in the formulation.

Target Organs

Active Ingredients

Thiabendazole: Thyroid, liver, spleen, kidney, gall bladder, blood

Inert Ingredients

Hypophosphorus Acid (50% Solution): Not Applicable

12. ECOLOGICAL INFORMATION

Summary of Effects

Thiabendazole:

Very toxic to aquatic organisms. The aquatic toxicity is not increased significantly by chronic exposure. Does not bioaccumulate in fish and is rapidly metabolized.

Eco-Acute Toxicity

Thiabendazole: Invertebrates (Water Flea) LC50/EC50 0.81 ppm
Fish (Trout) LC50/EC50 0.55 ppm
Fish (Bluegill) LC50/EC50 19 ppm
Birds (8-day dietary - Bobwhite Quail) LC50/EC50 > 5,620 ppm
Birds (8-day dietary - Mallard Duck) LC50/EC50 > 5,620 ppm

Eco-Chronic Toxicity

Thiabendazole: Not Available

Environmental Fate

Thiabendazole:

The information presented here is for the active ingredient, thiabendazole.
Low bioaccumulation potential. Stable in soil and water. Stable in soil and water. Sinks in water (after 24 h).

13. DISPOSAL CONSIDERATIONS

Disposal

Do not reuse product containers. Dispose of product containers, waste containers, and residues according to local, state, and federal health and environmental regulations.

Characteristic Waste: Corrosive

Listed Waste: D002

14. TRANSPORT INFORMATION

DOT Classification

Ground Transport - NAFTA
Proper Shipping Name: Pesticides, Liquid, Toxic, N.O.S. (Hypoposphorus Acid Solution)
Hazard Class or Division: Class 6.1
Identification Number: UN 2902
Packing Group: PG III

B/L Freight Classification

Fungicides, NOI, Poison

Comments

Water Transport - International
Proper Shipping Name: Pesticides, Liquid, Toxic, N.O.S. (Hypoposphorus Acid Solution)
Hazard Class or Division: Class 6.1
Identification Number: UN 2902
Packing Group: PG III

15. REGULATORY INFORMATION

EPCRA SARA Title III Classification

Section 311/312 Hazard Classes: Acute Health Hazard

Section 313 Toxic Chemicals: Thiabendazole (26.6%) (CAS No. 148-79-8)

California Proposition 65

Not Applicable

CERCLA/SARA 302 Reportable Quantity (RQ)

None

RCRA Hazardous Waste Classification (40 CFR 261)

Corrosive D002

TSCA Status

Exempt from TSCA, subject to FIFRA

16. OTHER INFORMATION

NFPA Hazard Ratings		HMIS Hazard Ratings	
Health:	1	Health:	1
Flammability:	1	Flammability:	1
Instability:	0	Reactivity:	0

0	Minimal
1	Slight
2	Moderate
3	Serious
4	Extreme

For non-emergency questions about this product call:

1-800-334-9481

Original Issued Date: 06/05/1989

Revision Date: 10/28/2004 Replaces: 04/30/2004

The information and recommendations contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind, expressed or implied, is made with respect to the information contained herein.

RSVP# : SCP-955-892A-00128L

End of MSDS

Biological Larvicide

VectoBac® 12AS

Aquepus Suspension

Active Ingredient:

Bacillus thuringiensis, subsp. *israelensis*, strain AM 65-52, fermentation solids and solubles	11.61%
Other Ingredients	88.39%
Total	100.00%

Potency: 1200 International Toxic Units (ITU) per mg
(Equivalent to 4.84 billion ITU per gallon, 1.279 billion ITU per liter)

There is no direct relationship between intended activity (potency) and the Percent Active Ingredient by Weight.

EPA Reg. No.73049-38
EPA Est. No. 33762-IA-001 List No. 5605

INDEX:

KEEP OUT OF REACH OF CHILDREN

CAUTION

1.0 FIRST AID

If in eyes	• Hold eye open and rinse slowly and gently with water for 15-20 minutes. • Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. • Call a poison control center or doctor for treatment advice.
If on skin or clothing	• Take off contaminated clothing. • Rinse skin immediately with plenty of water for 15-20 minutes. • Call a poison control center or doctor for treatment advice.

HOT LINE NUMBER

Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact 1-877-315-9819 (24 hours) for emergency medical treatment and/or transport emergency information. For all other information, call 1-800-323-9597.

2.0 PRECAUTIONARY STATEMENTS

2.1 HAZARD TO HUMANS (AND DOMESTIC ANIMALS)

CAUTION

Harmful if absorbed through skin. Causes moderate eye irritation. Avoid contact with skin, eyes, or clothing. Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash contaminated clothing before reuse.

Mixer/loaders and applicators not in enclosed cabs or aircraft must wear a dust/mist filtering respirator meeting NIOSH standards of at least N-95, R-95, or P-95. Repeated exposure to high concentrations of microbial proteins can cause allergic sensitization.

2.2 Physical and Chemical Hazards

Diluted or undiluted VectoBac 12AS can cause corrosion if left in prolonged contact with aluminum spray system components. Rinse spray system with plenty of clean water after use. Care should be taken to prevent contact with aluminum aircraft surfaces, structural components and control systems. In case of contact, rinse thoroughly with plenty of water. Inspect aluminum aircraft components regularly for signs of corrosion.

3.0 DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling. Do not apply directly to finished drinking water reservoirs or drinking water receptacles when water is intended for human consumption.

Do not apply when weather conditions favor drift from treated areas. Do not apply to metallic painted objects, such as automobiles, as spotting may occur. If spray is deposited on metallic painted surfaces, wash immediately with soap and water to avoid spotting.

Avoiding spray drift at the application site is the responsibility of the applicator. The interaction of many equipment- and weather-related factors determine the potential for spray drift. The applicator and the treatment coordinator are responsible for considering all these factors when making decisions.

3.1 Chemigation

Do not apply this product through any type of irrigation system unless labeling on chemigation is followed.

4.0 STORAGE AND DISPOSAL

Do not contaminate water, food, or feed by storage or disposal.

STORAGE: Store in a cool, [less than 86° F (30° C)], dry place.

PESTICIDE DISPOSAL: Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

CONTAINER DISPOSAL: Triple rinse (or equivalent). Then puncture and dispose of in a sanitary landfill, or by incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke. Do not reuse container.

5.0 GROUND AND AERIAL APPLICATION

VectoBac 12AS may be applied in conventional ground or aerial application equipment with quantities of water sufficient to provide uniform coverage of the target area. The amount of water will depend on weather, spray equipment, and mosquito habitat characteristics. Do not mix more VectoBac 12AS than can be used in a 72-hour period.

CONTINUED

For most ground spraying, apply in 5-100 gallons of water per acre using hand-pump, airblast, mist blower, etc., spray equipment.

For aerial application, VectoBac 12AS may be applied either undiluted or diluted with water. For undiluted applications, apply 0.25 to 2.0 pt/acre of VectoBac 12AS through fixed wing or helicopter aircraft equipped with either conventional boom and nozzle systems or rotary atomizers.

For diluted application, fill the mix tank or plane hopper with the desired quantity of water. Start the mechanical or hydraulic agitation to provide moderate circulation before adding the VectoBac 12AS. VectoBac 12AS suspends readily in water and will stay suspended over normal application periods. Brief recirculation may be necessary if the spray mixture has sat for several hours or longer. AVOID CONTINUOUS AGITATION OF THE SPRAY MIXTURE DURING SPRAYING.

Rinse and flush spray equipment thoroughly following each use.

For blackfly aerial applications, VectoBac 12AS can be applied undiluted via fixed wing or helicopter aircraft equipped with either conventional boom and nozzle systems or open pipes. Rate of application will be determined by the stream discharge and the required amount of VectoBac 12AS necessary to maintain a 0.5 - 25 ppm concentration in the stream water. VectoBac 12AS can also be applied diluted with similar spray equipment. Do not mix more VectoBac 12AS than can be used in a 72-hour period.

6.0 APPLICATION DIRECTIONS

Do not apply when wind speed favors drift beyond the area of treatment.

Mosquito Habitat	Suggested Rate Range*
(Such as the following examples): Irrigation ditches, roadside ditches, flood water, standing ponds, woodland pools, snow melt pools, pastures, catch basins, storm water retention areas, tidal water, salt marshes and rice fields.	0.25 - 2 pts/acres
In addition, standing water containing mosquito larvae, in fields growing crops such as: Alfalfa, almonds, asparagus, corn, cotton, dates, grapes, peaches and walnuts, may be treated at the recommended rates.	
When applying this product to standing water containing mosquito larvae in fields growing crops, do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application.	
Polluted water (such as sewage lagoons, animal waste lagoons).	1 - 2 pts/acre

*Use higher rate range in polluted water and when late 3rd and early 4th instar larvae predominate, mosquito populations are high, water is heavily polluted, and/or algae are abundant.

Blackflies Habitat	Suggested Rate Range
Streams	
Stream water† (=ppm) for 1 minute exposure time	0.5 - 25 mg/liter
Stream water† (=ppm) for 10 minutes exposure time	0.05 - 2.5 mg/liter

†Use higher rate range when stream contains high concentration of organic materials, algae, or dense aquatic vegetation.

†Discharge is a principal factor determining carry of Bti. Use higher rate or increase volume by water dilution in low discharge rivers or streams under low volume (drought) conditions.

7.0 NUISANCE FLIES

For control of nuisance flies (*Psychoda* spp., *Chironomus* spp.) in sewage treatment facilities utilizing trickling filter systems.

APPLICATION DIRECTIONS

Nuisance Fly Habitat	Suggested Rate Range*
Trickling filter system of wastewater treatment plants	10 - 20 mg/liter a.(0.833-1.67 ml) per liter of wastewater feed to the filter per 30 minutes

* Use high rate for control of *Chironomus* spp. Apply undiluted with pre-calibrated pump or other device into the wastewater feeding into the filters for a period of 30 minutes. Repeat applications as needed after 2-4 weeks. Control of *Chironomus* spp. may take up to 2 weeks.

8.0 NUISANCE AQUATIC MIDGES

For control of *Chironomine* midges (*Chironominae: Chironomini*) inhabiting shallow, manmade and natural lakes or ponds.

APPLICATION DIRECTIONS

Nuisance Midge Habitat	Suggested Rate Range*
Shallow Lakes and Ponds per sewage oxidation ponds (less than acre 6 feet deep)	1 gallon (3,785.5 ml) per acre

* Apply diluted with water in total volume of 5 gallons/acre by pouring or spraying over the surface to be treated with pre-calibrated device. Repeat application as needed after 2-4 weeks. Control of *Chironomine* midges may take up to 2 weeks.

9.0 CHEMIGATION

Apply this product through flood (basin) irrigation systems. Do not apply this product through any other type of irrigation system.

Crop injury, lack of effectiveness, or illegal pesticide residues in the crop can result from nonuniform distribution of treated water.

If you have any questions about calibration, you should contact State Extension Service Specialists, equipment manufacturers or other experts.

A person knowledgeable of this chemigation system and responsible for its operation, or under the supervision of the responsible person, shall shut the system down and make necessary adjustments should the need arise.

CONTINUED

9.1 RICE-FLOOD (BASIN) CHEMIGATION

Systems using a gravity flow pesticide dispensing system must meter the pesticide into the water at the head of the field and downstream of a hydraulic discontinuity such as a drop structure or weir box to decrease potential for water source contamination from backflow if water flow stops.

VectoBac 12AS is metered or dripped into rice floodwater at application stations positioned at the point of introduction (levee cut) of water into each rice field or pan. Two to three pints of VectoBac 12AS are diluted in water to a final volume of 5 gallons. The diluted solution is contained in a 5 gallon container and metered or dispersed into the irrigation water using a constant flow device at the rate of 80 ml per minute. Introduction of the solution should begin when 1/3 to 1/2 of the pan or field is covered with floodwater. Delivery of the solution should continue for a period of approximately 4-1/2 hours. Floodwater depth should not exceed 10-12 inches to prevent excessive dilution of VectoBac 12AS which could result in reduced larval kill.

Agitation is not required during the period in which the VectoBac 12AS solution is being dispersed.

Application of VectoBac 12AS into rice floodwater is not permitted using a pressurized water and pesticide injection system.

10.0 SMALL QUANTITY DILUTION RATES

Gallons Spray Solution/Acre
(Ounces Needed per Gallon of Spray)

VectoBac 12AS Rate In Pints Per Acre	10 Gal/A	25 Gal/A	50 Gal/A
0.25 (4 oz)	0.4	0.16	0.08
0.5 (8 oz)	0.8	0.32	0.16
1.0 (16 oz)	1.6	0.64	0.32
2.0 (32 oz)	3.2	1.28	0.64

11.0 NOTICE TO USER

SELLER MAKES NO WARRANTY, EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS OR OTHERWISE CONCERNING USE OF THIS PRODUCT OTHER THAN AS INDICATED ON THE LABEL. USER ASSUMES ALL RISKS OF USE, STORAGE OR HANDLING NOT IN STRICT ACCORDANCE WITH ACCOMPANYING DIRECTIONS.

VectoBac® 12AS
MSDS# BIO-0031 Rev. 2 ISSUED 12/16/03

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1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

MATERIAL NAME: VectoBac® 12AS Biological Larvicide

EPA REG. NO.: 73049-38
List Number: 5605
Code Number: 15576, 15577, 21894

MANUFACTURER: Valent BioSciences Corporation
870 Technology Way, Suite 100
Libertyville, Illinois 60048

EMERGENCY TELEPHONE NUMBERS
Emergency Health or Spill:
Outside the United States: 651-632-6184
Within the United States: 877-315-9819

2. COMPOSITION/INFORMATION ON INGREDIENTS

INGREDIENT NAME: Bacillus thuringiensis, subsp. israelensis
CONCENTRATION: 11.61 %
CAS NUMBER: 68038-71-1

OSHA-PEL	8HR TWA:	N/L
	STEL:	N/L
	CEILING:	N/L
ACGIH-TLV	8HR TWA:	N/L
	STEL:	N/L
	CEILING:	N/L
OTHER LIMITS	8HR TWA:	N/A
	STEL:	N/A
	CEILING:	N/A

INGREDIENT NAME: Inert Ingredients - identity withheld as a Trade Secret
CONCENTRATION: 88.39 %
CAS NUMBER: N/A

OSHA-PEL	8HR TWA:	N/L
	STEL:	N/L
	CEILING:	N/L
ACGIH-TLV	8HR TWA:	N/L
	STEL:	N/L
	CEILING:	N/L
OTHER LIMITS	8HR TWA:	N/A
	STEL:	N/A
	CEILING:	N/A

3. HAZARDS INFORMATION

EMERGENCY OVERVIEW: Product is non-toxic by ingestion, skin contact, or inhalation. May be irritating to skin and eyes, and may be a skin sensitizer.

ROUTE(S) OF ENTRY: Skin: No
Inhalation: No
Ingestion: No

SKIN CONTACT: Mild irritant

SKIN SENSITIZATION: Possible mild sensitizer

EYE CONTACT: Mild irritant

TARGET ORGANS: N/D

CARCINOGENICITY RATING: NTP: N/L IARC: N/L OSHA: N/L ACGIH: N/L
None

SIGNS AND SYMPTOMS: Direct contact with eyes or skin may cause mild irritation.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: N/D

4. FIRST AID MEASURES

EYES: Remove from source of exposure. Flush with copious amounts of water. If irritation persists or signs of toxicity occur, seek medical attention. Provide symptomatic/supportive care as necessary.

SKIN: Remove from source of exposure. Flush with copious amounts of water. If irritation persists or signs of toxicity occur, seek medical attention. Provide symptomatic/supportive care as necessary.

INGESTION: Remove from source of exposure. If signs of toxicity occur, seek medical attention. Provide symptomatic/supportive care as necessary.

INHALATION: Remove from source of exposure. If signs of toxicity occur, seek medical attention. Provide symptomatic/supportive care as necessary.

5. FIRE FIGHTING PROCEDURES

FLASH POINT: N/A (Aqueous suspension)
FLASH POINT METHOD: N/A
LOWER EXPLOSIVE LIMIT(%): N/A
UPPER EXPLOSIVE LIMIT(%): N/A
AUTOIGNITION TEMPERATURE: N/A

FIRE & EXPLOSION HAZARDS: Non-flammable and no explosive properties.

EXTINGUISHING MEDIA: Use appropriate media for underlying cause of fire.

FIRE FIGHTING INSTRUCTIONS: Wear protective clothing and self-contained breathing apparatus.

6. ACCIDENTAL RELEASE MEASURES

SPILL OR RELEASE PROCEDURES: Recover product and place in appropriate container for disposal. Ventilate and wash area.

7. HANDLING AND STORAGE

HANDLING: N/D.

STORAGE: Store in a cool (59-86° F or 15-30° C), dry place.

SPECIAL PRECAUTIONS: Wash thoroughly with soap and water after handling. Keep impervious gloves on until all potentially contaminated personal protective equipment is removed.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS: Use local exhaust.

RESPIRATORY PROTECTION: Not usually required. If necessary (Mixers/loaders and applicators not in enclosed cabs or aircraft), use a MSHA/NIOSH approved (or equivalent) respirator with a dust/mist filter (N-95, R-95, or P95).

SKIN PROTECTION: Impervious, waterproof gloves and clothing to minimize skin contact.

EYE PROTECTION: Not usually required. If necessary, use safety glasses or goggles.

OTHER PROTECTION: Wash thoroughly with soap and water after handling.

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE/PHYSICAL STATE: Light brown aqueous suspension.
ODOR: Typical fermentation (malt) odor.
BOILING POINT: Approx. 100° C
MELTING/FREEZING POINT: Approx. 0° C
VAPOR PRESSURE (mm Hg): N/D
VAPOR DENSITY (Air=1): N/D
EVAPORATION RATE: N/D
BULK DENSITY: 1.06-1.1 g/mL
SPECIFIC GRAVITY: N/D
SOLUBILITY: Disperses well in water
pH: 4.6-5.0
VISCOSITY: 250-1000 cps at 25 C

10. STABILITY AND REACTIVITY

CHEMICAL STABILITY: Stable.

INCOMPATIBILITIES: Diluted or undiluted product can cause corrosion if left in prolonged contact with aluminum surfaces (e.g. spray equipment, aircraft components).

HAZARDOUS DECOMPOSITION PRODUCTS: N/D.

HAZARDOUS POLYMERIZATION: Will not occur.

11. TOXICOLOGICAL INFORMATION

Acute Toxicity

ORAL LD50: > 5,000 mg/kg (rat)

DERMAL LD50: > 5,000 mg/kg (rabbit)

INHALATION LC50: > 5.34 mg/l (rat) No lethality was observed in rats after a 4 hour whole body exposure to this concentration of the product as an undiluted aerosol.

CORROSIVENESS: N/D. Not expected to have any corrosive properties.

DERMAL IRRITATION: Transient, mild to moderate redness was observed at the site of application in a skin irritation test in rabbits.

OCULAR IRRITATION: Transient, redness and conjunctival irritation observed in test animals in a study with this product. No positive ocular effects were observed.

DERMAL SENSITIZATION: Eight of ten animals positive in a dermal sensitization study in guinea pigs. Considered to be a mild sensitizer.

SPECIAL TARGET ORGAN EFFECTS: N/D.

CARCINOGENICITY INFORMATION: N/D. None of the components are classified as carcinogens.

12. ECOLOGICAL INFORMATION

ECOLOGICAL INFORMATION: N/D

13. DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHODS: Dispose of product in accordance with federal, state, and local regulations.

14. TRANSPORTATION INFORMATION

DOT STATUS: Not Regulated
PROPER SHIPPING NAME: N/A
HAZARD CLASS: N/A
UN NUMBER: N/A
PACKING GROUP: N/A
REPORTABLE QUANTITY: N/A

IATA/ICAO STATUS: Not Regulated
PROPER SHIPPING NAME: N/A
HAZARD CLASS: N/A
UN NUMBER: N/A
PACKING GROUP: N/A
REPORTABLE QUANTITY: N/A

IMO STATUS: Not Regulated
PROPER SHIPPING NAME: N/A
HAZARD CLASS: N/A
UN NUMBER: N/A
PACKING GROUP: N/A
REPORTABLE QUANTITY: N/A
FLASH POINT: N/D

15. REGULATORY INFORMATION

TSCA STATUS: Exempt RCRA STATUS: N/D

CERCLA STATUS: N/D PROP 65 (CA): N/D

SARA STATUS: N/D

16. OTHER INFORMATION

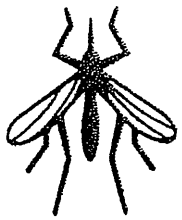
REASON FOR ISSUE: Updated Composition Information (Section 2) and Phys/Chem. Properties (Section 9).
APPROVAL DATE: 12/16/03
SUPERSEDES DATE: 07/03/03

LEGEND: N/A = Not Applicable
N/D = Not Determined
N/L = Not Listed
L = Listed
C = Ceiling
S = Short-term
® = Registered Trademark of Valent BioSciences
(TM) = Registered Trademark of Valent BioSciences

The information and recommendations contained herein are based upon tests believed to be reliable. However, Valent BioSciences does not guarantee their accuracy or completeness nor shall any of this information constitute a warranty, whether expressed or implied, as to the safety of the goods, the merchantability of the goods, or the fitness of the goods for a particular purpose. Adjustment to conform with actual conditions of usage may be required. Valent BioSciences assumes no responsibility for results obtained or for incidental or consequential damages arising from the use of these data. No freedom from infringement of any patent, copyright or trademark is to be inferred.

VALENT BIOSCIENCES. CORPORATION
870 Technology Way, Suite 100
Libertyville, IL 60048 - 800-323-9597

Altosid®
BRIQUETS



A SUSTAINED RELEASE MOSQUITO GROWTH REGULATOR TO PREVENT ADULT MOSQUITO EMERGENCE
(INCLUDING THOSE WHICH MAY TRANSMIT WEST NILE VIRUS)

SPECIMEN LABEL

ACTIVE INGREDIENT:

S-Methoprene (CAS #65733-16-6) (Dry Weight Basis)	8.62%
OTHER INGREDIENTS:	91.38%
Total	100.00%

This product contains water, therefore the weight of the briquet and percent by weight of active ingredient will vary with hydration. The Ingredient Statement is expressed on a dry weight basis.

EPA Reg No. 2724-375
EPA Est. No. 2724-TX-1

KEEP OUT OF REACH OF CHILDREN
CAUTION

PRECAUTIONARY STATEMENTS
HAZARDS TO HUMANS AND DOMESTIC ANIMALS
CAUTION

Causes moderate eye irritation. Harmful if absorbed through skin. Avoid contact with skin, eyes, or clothing. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, or using tobacco. Remove and wash contaminated clothing before reuse.

FIRST AID	
Call a poison control center or doctor for treatment advice.	
If in eyes	• Hold eye open and rinse slowly and gently with water for 15-20 minutes. • Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye.
If on skin or clothing	• Take off contaminated clothing. • Rinse skin immediately with plenty of water for 15-20 minutes.
Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact 1-800-248-7763 for emergency medical treatment information.	

ENVIRONMENTAL HAZARDS

Do not contaminate water when disposing of unused product.

DIRECTIONS FOR USE

It is a violation of Federal Law to use this product in a manner inconsistent with its labeling.

Note to User: Do not remove **ALTOSID® Briquets** from container except for immediate use.

Because of the unique mode of action of **ALTOSID Briquets,** users must be familiar with special techniques for accurate evaluation of treatments. See Application Rates and Intervals section of this label or consult local Mosquito Abatement Agency. Effective use of **ALTOSID Briquets** in sites subjected to periodic heavy flow of water requires careful attention to briquet placement and to the possible need for retreatment. Use of the product in storm drains, waste treatment and settling ponds, and similar systems should therefore be limited to experienced pesticide applicators, such as personnel of Mosquito Abatement Districts and Public Health Agencies.

Introduction: The **ALTOSID Briquet** is a formulation designed to release effective levels of **ALTOSID®** Insect Growth Regulator up to 30 days under typical environmental conditions. Release of **ALTOSID** Insect Growth Regulator is effected by dissolution of the **ALTOSID Briquet.** If briquets become covered by obstructions such as debris, vegetation, and loose sediment as a result of high rainfall or flow, normal

dispersion of the active ingredient can be inhibited. Water flow may increase the dissolution of the briquet thus reducing the residual life of the briquet. Inspect areas of water flow to determine appropriate retreatment intervals. To assure positive results, place **ALTOSID Briquets** where they will not be swept away by flushing action. **ALTOSID Briquets** prevent the emergence of adult mosquitoes including Anopheles, *Culex, Culiseta, Coquillettidia,* and *Mansonia* spp., as well as those of the floodwater mosquito complex (*Aedes, Ochlerotatus,* and *Psorophora* spp.) from treated water. Treated larvae continue to develop normally to the pupal stage where they die.

APPLICATION TIMING

Apply **ALTOSID Briquets** at the beginning of the mosquito season. **ALTOSID Briquets** provide up to 30 days residual control. Continue treatment through the last brood of the season. Apply at any stage of larval development. **ALTOSID Briquets** may be applied as a pre-flood treatment prior to wetting events. **ALTOSID Briquets** will be unaffected in dry down situations and will begin working again during subsequent wetting events until the briquet is exhausted.

NOTE: This insect growth regulator has no effect on mosquitoes which have reached the pupal or adult stage prior to treatment.

APPLICATION SITES

ALTOSID Briquets are designed to control mosquitoes in small bodies of water. Examples of application sites are: storm drains, catch basins, roadside ditches, fish ponds, ornamental ponds and fountains, other artificial water-holding containers, animal watering troughs, cesspools and septic tanks, waste treatment and settling ponds, flooded crypts, transformer vaults, abandoned swimming pools, tires, construction and other manmade depressions, cattail marshes, water-hyacinth beds, vegetation-choked phosphate pits, pastures, meadows, rice fields, freshwater swamps and marshes, salt and tidal marshes, treeholes, woodland pools, floodplains, and dredging spoil sites. For application sites connected by a water system, i.e., storm drains or catch basins, treat all of the water holding sites in the system to maximize the efficiency of the treatment program.

APPLICATION RATES AND INTERVALS

For mosquito control in non-(or low-) flow, shallow depressions (up to two ft in depth), treat on the basis of surface area placing one **ALTOSID Briquet** per 100 sq ft. For applications in storm water drainage areas, sewers, and catch basins: Place one **ALTOSID Briquet** into each catch basin. Follow the chart below to determine the number of **ALTOSID Briquets** to use in large catch basins. Place one **ALTOSID Briquet** per 100 sq ft of surface area up to two feet deep for storm water drainage areas. Use one additional **ALTOSID Briquet** per two feet of water depth in areas deeper than two feet.

ALTOSID BRIQUET APPLICATION CHART

Number of Briquets	Catch Basin Size	Water Depth (Feet)
1	0–1,500	0–2
2	1,500–3,000	2–4
3	3,000–4,500	4–6
4	4,500–6,000	6–8

STORAGE AND DISPOSAL

Do not contaminate water, food, or feed by storage or disposal. **Storage:** Store in cool, dry place. **Pesticide Disposal:** Wastes resulting from use of this product may be disposed of on site or at an approved waste disposal facility. **Container Disposal:** Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill or incineration, or if allowed by state and local authorities, by burning. If burned, stay out of smoke.

Always read the label before using this product.

For more information call **1-800-248-7763** or visit our web site: **www.altosid.com**

Wellmark

ZOËCON Professional Products

Wellmark International
Schaumburg, Illinois U.S.A.

April, 2005
Schaumburg, IL

25-24-035

Made in the U.S.A.

Date Issued: November, 2004
Supersedes: November, 2003

MATERIAL SAFETY DATA SHEET
ZOECON ALTOSID® BRIQUETS

Manufacturer: Wellmark International

Address: 1501 E. Woodfield Rd., Suite 200 West, Schaumburg, IL 60173

Emergency Phone: 1-800-248-7763

Transportation Emergency Phone: CHEMTREC: 1-800-424-9300

1. CHEMICAL PRODUCT INFORMATION

Product Name: Zoecon Altosid® Briquets

Chemical Name/Synonym: S)-Methoprene: Isopropyl (2E,4E,7S)-11-methoxy-3,7,11-trimethyl-2,4-dodecadienoate

Chemical Family: Terpenoid

Formula: C19 H34 O3

EPA Registration No.: 2724-375-

RF Number: 433A

2. COMPOSITION / INFORMATION ON INGREDIENTS

Component (chemical, common name)	CAS Number	Weight	Tolerance
(S)-Methoprene: Isopropyl (2E,4E,7S)-11-methoxy-3,7,11-trimethyl-2,4-dodecadienoate	65733-16-6	8.62%	Not established
Inert ingredients (non-hazardous and/or trade secret):		91.38%	

3. HAZARD INFORMATION

PRECAUTIONARY STATEMENT
Caution: Keep out of the reach of children..

SIGNS AND SYMPTOMS OF OVEREXPOSURE

No adverse reactions have resulted from normal human exposure during research and testing. Adverse animal reactions to this product have not been shown.

PRIMARY ROUTE OF ENTRY **Dermal/Eye:** Yes **Oral:** Yes **Inhalation:** Yes

ACUTE TOXICITY

Oral: LD50 (rat): > 34,600 mg/kg bw (highest dose level tested) (Based on S-Methoprene)

Dermal: LD50 (rabbit) >5,000 mg/kg bw) (Based on S-Methoprene)

Inhalation: LC50 (rat): >5.19 mg/L air (Based on S-Methoprene)

OTHER TOXICOLOGICAL INFORMATION

Skin Irritation: Non-irritating (rabbit) (Based on S-Methoprene)

Eye Irritation: Practically non-irritating (rabbit) (Based on S-Methoprene)

Sensitizer: Not a sensitizer(guinea pig) (Based on S-Methoprene)

4. FIRST AID MEASURES

Eye: Hold eyes open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eyes.

Skin: Wash material off with soap and water. Remove contaminated clothing and footwear. See a physician if symptoms persist.

Ingestion: Drink 1-2 glasses of water and try to induce vomiting. Seek medical attention. Never give anything by mouth to an unconscious person.

Inhalation: Remove victim to fresh air. See a physician if cough or other respiratory symptoms develop

Note to Physician: Treat symptomatically

5. FIRE FIGHTING MEASURES

NFPA Rating: **Health: 0** **Fire: 0** **Reactivity: 0**

Flammability Class: N/A

Flash Point: Does not flash

Explosive Limits (% of Volume): N/A

Extinguishing Media: Water, foam, dry chemical

Special Protective Equipment: Firefighters should wear protective clothing, eye protection, and self contained breathing apparatus.

Fire Fighting Procedures: Normal procedures. Do not allow run-off to enter waterways inhabited by aquatic organisms

Combustion Products: Carbon dioxide, carbon monoxide

Unusual Fire/Explosion Hazards: None

6. ACCIDENTAL RELEASE MEASURES

Steps to be taken: Sweep up material and place in a container for disposal. Do not allow spill to enter waterways inhabited by aquatic organisms

Absorbents: None necessary due to product form

Incompatibles: None

7. HANDLING AND STORAGE

Handling: Avoid contact with eyes or clothing. Avoid breathing dust. Wash thoroughly with soap and water after handling.

Storage: Store in a cool, dry place. Do not contaminate food or feed by storage or disposal. Keep away from children.

8. EXPOSURE CONTROL / PERSONAL MEASURES

Exposure Limits: Not applicable

Ventilation: Use with adequate ventilation.

Personal Protective Equipment: Under ordinary use conditions, no special protection is required. If prolonged exposure is expected, it is recommended to wear a MSHA/NIOSH approved organic vapor/pesticide respirator, impervious gloves, chemical goggles or safety glasses with side shields.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance and Odor:	Grey to black solid with slight hydrocarbon odor.
Boiling Point:	N/A
Melting Point:	N/A
Vapor Pressure (mm Hg):	N/A
Vapor Density (Air = 1):	N/A
Specific Gravity:	1.4 g/cc
Bulk Density:	N/A
Solubility:	1 ppm
Evaporation Rate:	N/A
pH:	N/A

10. STABILITY AND REACTIVITY

Stability:	Stable
Reactivity:	Non-reactive
Incompatibility w/ Other Materials:	None
Decomposition Products:	None
Hazardous Polymerization:	Will not occur

11. TOXICOLOGICAL INFORMATION

CHRONIC TOXICITY [Based on (RS)-Methoprene Technical]
Methoprene is not considered as a carcinogen. The NOEL for non-carcinogen effects in an 18-month mouse study was 250ppm.

DEVELOPMENTAL/REPRODUCTIVE TOXICITY [Based on (RS)-Methoprene Technical]
Methoprene is not a teratogen. The NOEL for maternal and embryo toxicity in rabbits was 200 mg/kg/day. The NOEL for reproductive effects in rats was 500 ppm.

MUTAGENICITY [Based on (RS)-Methoprene Technical]
Methoprene is not a mutagen.

12. ECOLOGICAL INFORMATION

ENVIRONMENTAL FATE [Based on (RS)-Methoprene Technical]

Hydrolysis:	T1/2 > 4 weeks
Photolysis:	T1/2 < 10 hours
Soil half life:	~ 10 days
Water solubility:	< 2 ppm

ECOTOXICITY [Based on (S)-Methoprene Technical]

Acute Toxicity:	fish:LC50 (trout): 760 ppb, (bluegill): > 370 ppb ((S)-Methoprene); **aquatic invertebrates**:LC50 (Daphnia): 360 ppb ((S)-Methoprene.)

13. DISPOSAL CONSIDERATIONS

Wastes resulting from the use of this product may be disposed of on site or at an approved waste management facility. Triple rinse (or equivalent). Do not contaminate water when disposing of rinsate or equipment wash waters. Then offer for recycling or reconditioning or puncture and dispose of in a sanitary landfill or incineration, or if allowed by state and local authorities, by burning. If burned, stay out of smoke.

14. TRANSPORT INFORMATION

DOT49CFR Description: Not regulated as hazardous by D.O.T.

Freight Classification: Insecticides, NOI other than poison in boxes or drums. NMFC 102120

15. REGULATORY INFORMATION

CERCLA (Superfund): Not regulated

RCRA: Not regulated as hazardous

SARA 311/312 HAZARD CATEGORIES

Immediate Health: Yes (irritation)

Delayed Health: No

Fire: No

Sudden Pressure: No

Reactivity: No

The information presented herein, while not guaranteed, was prepared by technically knowledgeable personnel and to the best of our knowledge is true and accurate. It is not intended to be all inclusive and the manner and conditions of use and handling may involve other or additional considerations.

25 24 041

ANVIL® 10+10 ULV

CLARKE

Contains An Oil Soluble Synergized Synthetic Pyrethroid For Control of Adult Mosquitoes (Including Organophosphate-Resistant Species) In Outdoor Residential and Recreational Areas.

Precautionary Statements
HAZARDS TO HUMANS AND DOMESTIC ANIMALS

Harmful if absorbed through the skin. Avoid contact with skin, eyes or clothing. In case of contact, flush with plenty of water. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, or using tobacco. Remove and wash contaminated clothing before reuse.

ENVIRONMENTAL HAZARDS

This product is toxic to fish. Runoff from treated areas or deposition of spray droplets into a body of water may be hazardous to fish. Do not apply over permanent bodies of water (lakes, rivers, permanent streams, natural ponds, commercial fish ponds, swamps, marshes or estuaries), except when necessary to target areas where adult mosquitoes are present, and weather conditions will facilitate movement of applied material beyond the body of water in order to minimize incidental deposition into the water body. Do not contaminate bodies of water when disposing of equipment rinsate or wash waters.

This product is toxic to bees exposed to direct treatment on blooming crops or weeds. Do not apply to blooming crops or weeds when bees are actively visiting the treatment area, except when applications are made to prevent or control a threat to public and/or animal health determined by a state, tribal or local health or vector control agency on the basis of documented evidence of disease causing agents in vector mosquitoes or the occurrence of mosquito-borne disease in animal or human populations, or if specifically approved by the state or tribe during a natural disaster recovery effort.

PHYSICAL OR CHEMICAL HAZARDS

Do not use or store near heat or open flame.

DIRECTIONS FOR USE

It is a violation of Federal Law to use this product in a manner inconsistent with its labeling.

For use only by federal, state, tribal or local government officials responsible for public health or vector control, or by persons certified in the appropriate category or otherwise authorized by the state or tribal lead pesticide regulatory agency to perform adult mosquito control applications, or by persons under their direct supervision.

E.P.A. EST. No. 1021-MN-2
EPA Reg. No. 1021-1688-8329
NET CONTENTS

LOT NO.

ACTIVE INGREDIENTS:	
3-Phenoxybenzyl-(1RS, 3RS; 1RS, 3SR)-2,2-dimethyl-3-(2-methylprop-1-enyl) cyclopropanecarboxylate ..	10.00%
* Piperonyl Butoxide, Technical	10.00%
** OTHER INGREDIENTS	80.00%
	100.00%

* Equivalent to 8.00% (butylcarbityl) (6-propylpiperonyl) ether and 2.00% related compounds

** Contains a petroleum distillate

Contains 0.74 pounds of Technical SUMITHRIN®/Gallon and 0.74 pounds Technical Piperonyl Butoxide/Gallon

SUMITHRIN®- Registered trademark of Sumitomo Chemical Company, Ltd.

KEEP OUT OF REACH OF CHILDREN
CAUTION

PRECAUCIONAL USUARIO: Si usted no lee ingles, no use este producto hasta que la etiqueta haya sido explicado ampliamente.

FIRST AID

IF SWALLOWED • Immediately call a poison control center or doctor. • Do not induce vomiting unless told to do so by a poison control center or doctor. • Do not give any liquid to the person. • Do not give anything by mouth to an unconscious person

IF ON SKIN OR CLOTHING: • Take off contaminated clothing. • Rinse skin immediately with plenty of water for 15-20 minutes. • Call a poison control center or doctor for treatment advice.

NOTE TO PHYSICIAN: Contains a petroleum distillate – vomiting may cause aspiration pneumonia.

Have the product container or label with you when calling a poison control center or doctor, or going for treatment. For information regarding medical emergencies or pesticide incidents, call the International Poison Center at 1-888-740-8712.

MANUFACTURED FOR
CLARKE MOSQUITO CONTROL PRODUCTS, INC.
159 N. GARDEN AVENUE • ROSELLE, ILLINOIS 60172

NOTICE: Seller makes no warranty, expressed or implied concerning the use of this product other than indicated on the label. Buyer assumes all risk of use and/or handling of this material when use and/or handling is contrary to label instructions.

Before making the first application in a season, it is advisable to consult with the state or tribal agency with primary responsibility for pesticide regulation to determine if other requirements exist.

IN CALIFORNIA: This product is to be applied by County Health Department, State Department of Health Services, Mosquito and Vector Control or Mosquito Abatement District personnel only.

USE AREAS: For use in mosquito adulticiding programs involving outdoor residential and recreational areas where adult mosquitoes are present in annoying numbers in vegetation surrounding parks, woodlands, swamps, marshes, overgrown areas and golf courses.

For best results, apply when mosquitoes are most active and weather conditions are conducive to keeping the fog close to the ground. i.e. cool temperatures and wind speed not greater than 10 mph.

Do not treat a site with more than 0.0036 pounds of Sumithrin® per acre in a 24-hour period. Do not exceed 1.0 pounds of Sumithrin® per acre in any site in any year. More frequent applications may be made to prevent or control a threat to public and/or animal health determined by a state, tribal, or local health or vector control agency on the basis of documented evidence of disease causing agents in vector mosquitoes or the occurrence of mosquito-borne disease in animal or human populations, or if specifically approved by the state or tribe during a natural disaster recovery effort.

Note: ANVIL 10+10 ULV can not be diluted in water. Dilute this product with light mineral oil if dilution is preferred.

SPRAY DROPLET SIZE DETERMINATION

Ground Equipment: Spray equipment must be adjusted so that the volume median diameter (VMD) is 8 to 30 microns ($8 \leq Dv\ 0.5 \leq 30$ um) and that 90% of the spray is contained in droplets smaller than 50 microns (Dv 0.9 < 50 um). Directions from the equipment manufacturer or vendor, pesticide registrant or a test facility using a laser-based measurement instrument must be used to adjust equipment to produce acceptable droplet size spectra. Application equipment must be tested at least annually to confirm that pressure at the nozzle and nozzle flow rate(s) are properly calibrated.

Aerial Equipment: Spray equipment must be adjusted so that the volume median diameter produced is less than 60 microns (Dv < 60 um) and that 90% of the spray is contained in droplets smaller than 100 microns (Dv 0.9 < 100 um). The effects of flight speed and, for non-rotary nozzles, nozzle angle on the droplet size spectrum must be considered. Directions from the equipment manufacturer or vendor, pesticide registrant or a test facility using a wind tunnel and laser-based measurement instrument must be used to adjust equipment to produce acceptable droplet size spectra. Application equipment must be tested at least annually to confirm that pressure at the nozzle and nozzle flow rate(s) are properly calibrated.

GROUND ULV APPLICATION

Apply ANVIL 10+10 ULV through a standard ULV cold aerosol or non-thermal aerosol (cold fog) generator. Consult the following table for examples of various dosage rates using a swath width of 300 feet for acreage calculations.

Dosage Rate		Flow Rates in fluid oz./minute at truck speeds of:			
	Fl. oz. ANVIL				
Lbs Sumithrin®/acre	10+10 ULV per Acre	5MPH	10MPH	15MPH	20MPH
0.0036	0.62	1.9 oz.	3.8 oz	5.7 oz	7.6 oz
0.0024	0.42	1.3 oz	2.5 oz	3.8 oz	5.1 oz
0.0012	0.21	0.6 oz	1.3 oz	1.9 oz	2.5 oz

ANVIL 10 + 10 ULV may be applied undiluted with a non-thermal ULV portable "backpack" spray unit capable of delivering particles in the 5 to 25 micron range. Apply at a walking speed of 2 mph, making sure that the same amount of A.I. is applied per acre.

ANVIL 10 + 10 ULV may be applied with suitable thermal fogging equipment. Do not exceed the maximum rates listed above. May be applied at speeds of 5 to 20 mph.

AERIAL APPLICATION

Prohibition on aerial use: Not for aerial application in Florida unless specifically authorized by the Bureau of Entomology, Florida Department of Agriculture and Consumer Service.

ANVIL 10+10 ULV may be applied at rates of 0.21 to 0.62 fluid ounces of ANVIL 10+10 ULV per acre by fixed wing or rotary aircraft equipped with suitable ULV application equipment. ANVIL 10+10 ULV may also be diluted with a suitable solvent such as mineral oil and applied by aerial ULV equipment so long as 0.62 fluid ounces per acre of ANVIL 10+10 ULV is not exceeded. Aerial application should be made at an altitude below 300 feet. Do not apply when ground wind speeds exceed 10 mph.

Dosage Rate	Flow Rates in fluid oz./acre
Lbs Sumithrin®/acre	ANVIL® 10 + 10 ULV
0.0036	.62 oz
0.0024	.42 oz
0.0012	.21 oz

STORAGE & DISPOSAL

Do not contaminate water, food or feed by storage or disposal.

STORAGE: Store in a cool, dry place. Keep container closed.

CONTAINER DISPOSAL: Triple rinse (or equivalent) then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by other approved state and local procedures.

PESTICIDE DISPOSAL: Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

FOR MORE INFORMATION CALL:
1-800-323-5727

AL0001

Material Safety Data Sheet

Date last revised: 15 December 2005

I. General Information

Chemical Name and Synonyms Sumithrin Piperonyl Butoxide	**Trade Name & Synonyms** Anvil 10+10 ULV
Chemical Family Synergized Synthetic Pyrethroid	**EPA Registration Number** 1021-1688-8329
Proper DOT Shipping Name Environmentally Hazardous Substances, Liquid, N.O.S., Marine Pollutant (d-Phenothrin) [bulk only]	**DOT Hazard Classification** Class 9, UN 3082 [bulk only]
Manufacturer Clarke Mosquito Control Products, Inc.	**Manufacturer's Phone Number** (630) 894-2000
Manufacturer's Address 159 North Garden Avenue Roselle, Illinois 60172	**INFOTRAC (Emergency) Hotline** 1-800-535-5053

II. Ingredients

Principal Hazardous Components	CAS #	Percent
Sumithrin® [3-Phenoxybenzyl-(1RS, 3RS; 1RS, 3SR) 2,2-dimethyl-3-(2-methylprop-2-enyl) cyclopropane-carboxylate]	026002-80-2	10.00%
Piperonyl Butoxide [Alpha-(2-(1-butoxyethoxy)-4,5-methylenedioxy-2-propyltoluene]	000051-03-6	10.00%
Petroleum Distillates		1 – 15%
Inert Ingredients are propriety or non-hazardous. Values are not product specifications		40 –78%

III. Physical Data

Boiling Point (°F): Not Established	**Specific Gravity (H_2O = 1):** 0.884
Vapor Pressure (mm Hg.): Not Established	**Vapor Density (Air = 1):** Not Established
Solubility in Water: Emulsifiable	**pH:** Not Applicable
Appearance: Liquid, Clear with a light yellow tinge	**Odor:** Pungent aromatic, similar to smell of mothballs

IV. Fire & Explosion Hazard Data

Flash Point (Test Method: +200 °F (Tag Closed Cup)

Extinguishing Media: Foam, carbon dioxide, or dry chemical

Special Fire Fighting Procedures: Treat as an oil fire. Use a full-faced self-contained breathing apparatus along with full protective gear. Keep nearby containers and equipment cool with a water stream. Contain the run-off, if possible, for proper disposal.

V. Health Hazard Data

Exposure Limits: Not established by OSHA or ACGIH

EMERGENCY FIRST AID

Skin Contact: CAUTION. Can cause a burning sensation on more sensitive areas (face, eyes, mouth). Prolonged or repeated exposure can cause irritation and reddening of the skin, possibly progressing into dermatitis. Immediately flush affected area with large amounts of water. Remove contaminated clothing and wash affected areas with soap and water. If irritation persists, get medical attention.

Eye: CAUTION. Can cause temporary irritation, tearing, and blurred vision. Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing Call a poison control center or doctor for treatment advice.

Inhalation: CAUTION. Excessive inhalation can cause nasal and respiratory irritation. Remove affected person to fresh air. Give oxygen, if necessary. If breathing has stopped, administer artificial respiration and get medical attention immediately

Ingestion: CAUTION. Can cause stomach irritation, resulting in nausea, cramps and vomiting. Excessive ingestion can cause nervous system disorders, such as fatigue, dizziness, headaches, lack of coordination, tremors and unconsciousness. Do not induce vomiting because of aspiration pneumonia hazard. Call a physician or poison control center.

Material Safety Data Sheet

Anvil 10+10 ULV

Date last revised: 15 December, 2005

VI. Reactivity Data

Stability:	Stable
Incompatibility	Strong acidic or alkaline materials
Hazardous Decomposition Products	Not Applicable

VII. Environmental Protection Procedures

Spill Response:
Shut off ignition sources. Stop release, if possible without risk. Dike or contain release, if possible, and if immediate response can prevent further damage or danger. Isolate and control access to the release area. Take actions to reduce vapors. Absorb with appropriate absorbent. For large spills, collect product into drums, etc., via drains, pumps, etc. Absorb with appropriate absorbent. Clean spill area of residues and absorbent. Contaminated absorbent and wash water should be disposed of according to local, state and federal regulations.

Storage:
Store containers upright and closed. Store in areas that are cool, dry and well ventilated. Keep away from heat, ignition sources and strong oxidizers. Emptied contained may retain product residues.

Waste Disposal:
Do not contaminate water when disposing of equipment wash waters. Do not discharge effluent containing this product into lakes, streams, ponds, estuaries, oceans, or other waters unless in accordance with the requirements of a National Pollutant Discharge Elimination System (NPDES) permit and the permitting authority has been notified in writing prior to discharge. Do not discharge effluent containing this product into sewer systems without previously notifying the sewage treatment plant authority. For guidance, contact your State Water Board or Regional Office of the EPA. Do not mix with other waste materials.

VIII. Special Protection Information

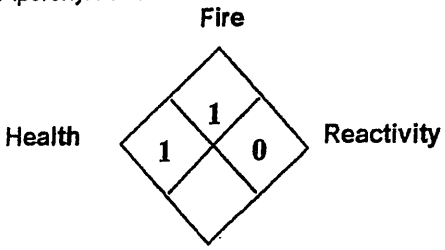
Eye Protection: OSHA-approved safety glasses, goggles or face shield	**Skin Protection:** Handlers should wear protective clothing, chemical resistant gloves, and chemical resistant apron when cleaning mixing or loading.
Respiratory Protection: Not required	**Ventilation:** Mechanical ventilation should be used when handling this product in enclosed spaces.

Other: IMPORTANT. Read and observe all precautions and instructions on the label.

IX. Additional Regulatory Information

SARA Title III Data
Section 313: (Title III Superfund Amendment and Reauthorization Act)
This product contains the following toxic chemicals subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

Ingredient	CAS Number	Percentage (by weight)
Piperonyl butoxide	51-03-6	10.0%



NFPA Code Key
4 = Severe
3 = Serious
2 = Moderate
1 = Minimal

The information and statements herein are believed to be reliable but are not to be construed as a warranty or representation for which we assume legal responsibility. Users should undertake sufficient verification and testing to determine the suitability for their own particular purpose of any information or products referred to herein. NO WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE IS MADE.

Sevin® SL

CARBARYL INSECTICIDE

Specimen Label

FOR AGRICULTURAL OR COMMERCIAL USE ONLY

ACTIVE INGREDIENT:

Carbaryl (1-naphthyl N-methylcarbamate)	43.0% by wt.
INERT INGREDIENTS:	57.0% by wt.
TOTAL	100.0% by wt.

(Contains 4 pounds Carbaryl Per Gallon)

KEEP OUT OF REACH OF CHILDREN

CAUTION

EPA Reg. No. 432-1227 **EPA Est. No. 264-MO-02**

IN CASE OF MEDICAL, ENVIRONMENTAL, OR TRANSPORTATION EMERGENCIES OR INJURIES, CALL 1-800-334-7577 (24 HOURS/DAY).

FOR PRODUCT INFORMATION, CALL TOLL-FREE: 1-800-331-2867

NET CONTENTS: 1, 2.5 OR 15 GALLONS

BACKED by BAYER.

MSDS Number: 000000000196

SEVIN® 80WSP CARBARYL INSECTICIDE

MSDS Version 2.3

SECTION 1. CHEMICAL PRODUCT AND COMPANY INFORMATION

Product Name	SEVIN® 80WSP CARBARYL INSECTICIDE
Chemical Name	Carbaryl
Synonym	
MSDS Number	196
Chemical Family	
Chemical Formulation	C12H11NO2
EPA Registration No.	432-1226
Canadian Registrat. No.	

Bayer Environmental Science
95 Chestnut Ridge Road
Montvale, NJ 07645
USA

For Product Use Information: (800)331-2867 Monday through Friday(CRLF) 8:00AM-4:30PM(CRLF) For Medical Emergency contact DART: (800) 334-7577 24 Hours/Day(CRLF) For Transportation Emergency CHEMTREC: (800) 424-9300 24 Hours/Day

Product Use Description FIFRA regulated use only.

SECTION 2. COMPOSITION/INFORMATION ON INGREDIENTS

Component Name	CAS No.	Concentration % by Weight	
		Minimum	Maximum
CARBARYL, (1-NAPHTHYL N- METHYLCARBAMATE)	63-25-2	80.0000	
CALCIUM SILICATE	1344-95-2		
QUARTZ	14808-60-7	0.1100	
DIATOMACEOUS EARTH	61790-53-2		
Other ingredients (Trade secret)			

SECTION 3. HAZARDS IDENTIFICATION

NOTE: Please refer to Section 11 for detailed toxicological information.

Emergency Overview	Warning! Keep out of the reach of children. Hazard to humans and domestic animals. May be fatal if swallowed. Harmful if inhaled or absorbed through skin. Harmful if gets in eyes.
Physical State	solid powder
Odor	phenolic
Appearance	off-white to pale yellow
Immediate Effects	
Eye	Do not get in eyes. Causes redness, irritation, tearing.
Skin	Harmful if absorbed through skin. Do not get on skin or clothing. May produce symptoms similar to those from ingestion.
Ingestion	May be fatal if swallowed. This product causes reversible cholinesterase inhibition. Repeated overexposure may cause more severe cholinesterase inhibition with more pronounced signs and symptoms. May lead to rapid onset of nausea, vomiting, diarrhea, abdominal pain, involuntary shaking, excess salivation, pinpoint pupils, blurred vision, profuse sweating, temporary paralysis, respiratory depression, and convulsions.
Inhalation	Harmful if inhaled. Do not breathe vapors, dusts or spray mists. May produce symptoms similar to those from ingestion.
Chronic or Delayed Long-Term	This product contains ingredients that are considered to be probable or suspected human carcinogens (See Section 11 - Chronic).
Medical Conditions Aggravated by Exposure	Inhalation of product may aggravate existing chronic respiratory problems such as asthma, emphysema or bronchitis. Skin contact may aggravate existing skin disease.
Signs and Symptoms	Overexposure may cause salivation, watery eyes, pinpoint eye pupils, blurred vision, muscle tremors, difficult breathing, excessive sweating, abdominal cramps, nausea, vomiting, diarrhea, weakness, headache. In severe cases convulsion, unconsciousness and respiratory failure may occur. Signs and symptoms occur rapidly following overexposure to this product.

SECTION 4. FIRST AID MEASURES

Eye	Flush eyes with plenty of water. Seek medical attention if irritation develops or persists.

Skin	Wash skin thoroughly with soap and water.
Ingestion	Never give anything by mouth to an unconscious or convulsing person. If conscious and not convulsing, drink 1 to 2 glasses of water and induce vomiting by touching the back of the throat with finger. Get medical attention.
Inhalation	Remove victim from contaminated atmosphere. Call a physician.
Note to Physician	Contact a physician immediately in all cases of suspected poisoning. Transport to a physician or hospital immediately and show a copy of this label to the physician. If poisoning is suspected in animals, contact a veterinarian. Treat symptomatically. Overexposure to materials other than this product may have occurred. This product contains a methyl carbamate insecticide, which is a chloinesterase inhibitor. Overexposure to this substance may cause toxic signs and symptoms due to stimulation of the cholinergic nervous system. These effects of overexposure are spontaneously and rapidly reversible. Gastric lavage may be used if this product has been swallowed. Poisoning may occur rapidly after ingestion and prompt removal of stomach contents is indicated. Specific treatment consists of parenteral atropine sulfate. Caution should be maintained to prevent overatropinization. Improve tissue oxygenation as much as possible before administering atropine to minimize the risk of ventricular fibrillation. Mild cases may be given 1 to 2 mg intramuscularly every 10 minutes until full atropinization has been achieved and repeated thereafter whenever symptoms reappear. Severe cases should be given 2 to 4 mg intravenously every 10 minutes until fully atropinized, then intramuscularly every 30 to 60 minutes as needed to maintain the effect for at least 12 hours. Dosages for children should be appropriately reduced. Complete recovery from overexposure is to be expected within 24 hours. Narcotics and other sedative should not be used. Further, drugs like 2-PAM (pyridine-2-aldoxime methiodide) are NOT recommended. To aid in confirmation of a diagnosis, urine samples should be obtained within 24 hours of exposure and immediately frozen. Analysis will be arranged by Bayer.

SECTION 5. FIRE FIGHTING MEASURES

Flash Point	Not applicable
Fire and Explosion Hazards	Like all organic and most dry chemicals, as a powder or dust, this product (when mixed with air in critical proportions and in the presence of an ignition source) may present an explosion hazard.
Suitable Extinguishing Media	Small Fires:, carbon dioxide (CO2), dry chemical

Large Fires:, alcohol foam, polymer foam, water spray

Fire Fighting Instructions

Firefighters should wear NIOSH/MSHA approved self-contained breathing apparatus and full protective clothing. Keep unnecessary people away, isolate hazard area and deny entry. Evacuate residents who are downwind of fire. Dike area to prevent runoff and contamination of water sources. Dispose of fire control water later. Persons who may have been exposed to contaminated smoke should be immediately examined by a physician and checked for symptoms of poisoning. The symptoms should not be mistaken for heat exhaustion or smoke inhalation.

SECTION 6. ACCIDENTAL RELEASE MEASURES

General and Disposal

Evacuation Procedures and Safety: Wear appropriate gear for the situation. See Personal Protection information in Section 8.

Cleanup and Disposal of Spill: Shovel up into an appropriate closed container (see Section 7: Handling and Storage). Clean up residual material by washing area with water. Decontaminate tools and equipment following cleanup. Avoid creation of dusty conditions.

Land Spill or Leaks

Containment of Spill: Follow procedure under Cleanup and Disposal of Spill.

Environmental and Regulatory Reporting: If spilled on the ground, the affected area should be scraped clean and placed in an appropriate container for disposal. Runoff from fire control or dilution water may cause pollution. Prevent material from entering public sewer system or any waterway. Spills may be reportable to the National Response Center (800-424-8802) and to state and/or local agencies.

SECTION 7. HANDLING AND STORAGE

Handling Procedures

Avoid direct or prolonged contact with skin and eyes. Avoid breathing dusts. Do not ingest.

Storing Procedures

Store in original container. Keep in a dry, cool place. Keep out of reach of children and domestic animals.

Work/Hygienic Procedures

Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet.

Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.

Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this products concentrate. Do not reuse them. Follow manufacturer's instructions for cleaning/maintaining Personal Protective

Equipment (PPE). If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application. For any requirements specific to your State or Tribe, consult the agency responsible for pesticide regulation.

Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 12 hours.

Min/Max Storage Temperatures 0 °C / 38 °C

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls When handlers used closed systems, enclosed cabs, or aircraft in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [(40 CFR 170.240(d) (4-6)], the handler PPE requirements may be reduced or modified as specified in the WPS.

Where engineering controls are indicated by use conditions or a potential for excessive exposure exists, the following traditional exposure control techniques may be used to effectively minimize employee exposures: general area dilution/exhaust ventilation.

Eye/Face Protection Eye and face protection requirements will vary dependent upon work environment conditions and material handling practices. Appropriaate ANSI Z87 approved equipment should be selected for the particular use intended for this material.

Eye contact should be prevented through use of chemical safety glasses with side shields or splash proof goggles. An emergency eye wash must be readily accessible to the work area.

Body Protection Applicators and other handlers must wear: Long-sleeved shirt and long pants waterproof gloves shoes plus socks Chemical resistant headgear for overhead exposure

Skin contact should be prevented through use of suitable protective clothing, gloves and footwear, selected with regard for use conditions and exposure potential. Consideration must be given both to durability as well as permeation resistance.

Respiratory Protection When respirators are required, select NIOSH/MSHA approved equipment based on actual or potential airborne concentrations and in accordance with the appropriate regulatory standards and/or industrial recommendations.

Under normal conditions, in the absence of other airborne contaminants, the

following devices should provide protection from this material up tothe conditions specified by the appropriate OSHA, WHMIS or ANSI standard(s): Air-purifying (half-mask/full-face) respirator with cartridges/canister approved for use against pesticides.

Under conditions immediately dangerous to life or health, or emergency conditions with unknown concentrations, use a full-face positive pressure air-supplied respirator equipped with an emergency escape airsupply unit or use a self-contained breathing apparatus unit.

General Protection

These recommendations provide general guidance for handling this product. Because specific work environments and material handling practices vary, safety procedures should be developed for each intended application. While developing safe handling procedures, do not overlook the need to clean equipment and piping systems for maintenance and repairs. Waste resulting from these procedures should be handled inaccordance with Section 13: Disposal Considerations.

Assistance with selection, use and maintenance of worker protection equipment is generally available from equipment manufacturers.

Exposure Limits

CARBARYL, (1-NAPHTHYL N-METHYLCARBAMATE)	63-25-2	ACGIH	TWA		5 mg/m3
		NIOSH	REL		5 mg/m3
		OSHA Z1	PEL		5 mg/m3
		OSHA Z1A	TWA		5 mg/m3
		US CA OEL	TWA PEL		5 mg/m3
CALCIUM SILICATE	1344-95-2	ACGIH	TWA		10 mg/m3
		Remarks		The value is for particulate matter containing no asbestos and <1% crystalline silica.	
		NIOSH	REL		5 mg/m3
		Form of Exposure		Respirable.	
		NIOSH	REL		10 mg/m3
		Form of Exposure		Total	
		OSHA Z1	PEL		5 mg/m3
		Form of Exposure		Respirable fraction.	
		OSHA Z1	PEL		15 mg/m3
		Form of Exposure		Total dust.	
		OSHA Z1A	TWA		5 mg/m3
		Form of Exposure		Respirable fraction.	
		OSHA Z1A	TWA		15 mg/m3
		Form of Exposure		Total dust.	
		US CA OEL	TWA PEL		5 mg/m3
		Form of Exposure		Respirable fraction.	
		US CA OEL	TWA PEL		10 mg/m3

		Form of Exposure	Total dust.	
QUARTZ	14808-60-7	NIOSH REL		0.05 mg/m3
		Form of Exposure	Respirable dust.	
		OSHA Z1A TWA		0.1 mg/m3
		Form of Exposure	Respirable dust.	
		US CA OEL TWA PEL		0.1 mg/m3
		Form of Exposure	Respirable dust.	
		US CA OEL TWA PEL		0.3 mg/m3
		Form of Exposure	Total dust.	
		ACGIH TWA		0.05 mg/m3
DIATOMACEOUS EARTH	61790-53-2	OSHA Z1A TWA		6 mg/m3
		US CA OEL TWA PEL		3 mg/m3
		Form of Exposure	Respirable dust.	
		US CA OEL TWA PEL		6 mg/m3
		Form of Exposure	Total dust.	
		US CA OEL TWA PEL		6 mg/m3
		ACGIH TWA		10 mg/m3
		Remarks	The value is for particulate matter containing no asbestos and <1% crystalline silica.	
		ACGIH TWA		3 mg/m3
		Remarks	The value is for particulate matter containing no asbestos and <1% crystalline silica.	

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	off-white to pale yellow
Physical State	solid powder
Odor	phenolic
pH	4 - 6.5 at 10 wt/wt%.
Vapor Pressure	Not available
Vapor Density (air = 1)	Not available
Specific Gravity	Not Available
Boiling Point	Not available
Melting/Freezing Point	Not available
Solubility (in water)	dispersible

Molecular Weight	201.2 g/mol
Decomposition Temperature	140 °C
Other Information	Physical and Chemical properties here represent typical properties of this product. Contact the business area using the Product Information phone number in Section 1 for its exact specifications.

SECTION 10. STABILITY AND REACTIVITY

Chemical Stability	This material is stable under normal handling and storage conditions described in Section 7.
Conditions to Avoid	extreme heat open flame extreme humidity moisture
Incompatibility	strong acids bases
Hazardous Products of Decomposition	Decomposition Type: thermal oxides of nitrogen carbon oxides methyl isocyanate (trace; no adverse effects expected)
Hazardous Polymerization (Conditions to avoid)	not applicable

SECTION 11. TOXICOLOGICAL INFORMATION

Acute Oral Toxicity	Rat: LD50: 281 mg/kg
Acute Dermal Toxicity	Rabbit: LD50: > 2,000 mg/kg
Acute Inhalation Toxicity	No test data found for product. Acute Respiratory Irritation: No test data found for product.
Skin Irritation	Rabbit: Minimally Irritating
Eye Irritation	Rabbit: Slightly irritating.
Chronic Toxicity	Carbaryl has been shown to cause tumors in laboratory animals in lifetime

feeding studies. Carbaryl, when administered by various routes, at doses toxic to the maternal animals, has been shown to produce developmental toxicity in a number of species. Carbaryl produces no teratogenic effect in the absence of maternal toxicity.

Assessment Carcinogenicity

ACGIH		
CARBARYL, (1-NAPHTHYL N-METHYLCARBAMATE)	63-25-2	Group A4
CALCIUM SILICATE	1344-95-2	Group A4
QUARTZ	14808-60-7	Group A2
NTP		
QUARTZ	14808-60-7	
IARC		
CARBARYL, (1-NAPHTHYL N-METHYLCARBAMATE)	63-25-2	3
OSHA		
None		

SECTION 12. ECOLOGICAL INFORMATION

Acute and Prolonged Toxicity to Fish

The following data is based on the technical grade active ingredient(s) (TGAI).
Rainbow trout
LC50: 1950 ug/l
Exposure Time: 96 h

The following data is based on the technical grade active ingredient(s) (TGAI).
Bluegill sunfish
LC50: 6760 ug/l
Exposure Time: 96 h

Toxicity Other Non Mammal Terr. Species

The following data is based on the technical grade active ingredient(s) (TGAI).
Mallard duck
LC50: > 5,000 mg/kg
Exposure Time: 8 d
Dietary concentrations.

The following data is based on the technical grade active ingredient(s) (TGAI).
Bobwhite quail
LC50: > 5,000 mg/kg
Exposure Time: 8 d
Dietary concentrations.

Environmental Precautions

This product is toxic to aquatic and estuarine invertebrates. For terrestrial uses, do not apply directly to water, or to areas where surface water is present, or to intertidal areas below mean high water mark. Discharge for rice fields may kill aquatic and estuarine invertebrates. Do not apply when weather conditions favor drift from treated areas. Do not contaminate water by cleaning of equipment or disposal of equipment wastewaters. Do not contaminate water when disposing of

equipment washwaters.

BEE CAUTION: MAY KILL HONEYBEES IN SUBSTANTIAL NUMBERS.

This product is highly toxic to bees exposed to direct treatment of residues on blooming crops or weeds. Do not apply this product or allow it to drift to blooming crops or weeds if bees are visiting the treatment area.

Environmental Fate

For chemical fate data call the product information phone number listed in Section 1.

SECTION 13. DISPOSAL CONSIDERATIONS

General Disposal Guidance

Chemical additions, processing or otherwise altering this material may make the waste management information presented in this MSDS incomplete, inaccurate or otherwise inappropriate. Please be advised that state and local requirements for waste disposal may be more restrictive or otherwise different from federal laws and regulations. Consult state and local regulations regarding the proper disposal of this material.

Pesticide Disposal: Do not contaminate water, food, or feed by storage or disposal. Open dumping is prohibited. Wastes resulting from use of this product may be disposed of on site or at an approved waste disposal facility.

EPA Hazardous Waste - Yes

Container Disposal

Do not reuse outer bag. Dispose of outer bag in the trash, or, if allowed by State and local authorities, by burning. If burned, stay out of smoke.

RCRA Classification

63-25-2 CARBARYL, (1-NAPHTHYL N- METHYLCARBAMATE)

US. EPA Resource Conservation and Recovery Act (RCRA) U List of Hazardous Wastes (40 CFR 261.33(f) and 40 CFR 302 [CERCLA]): U279

SECTION 14. TRANSPORT INFORMATION

Transportation Status:
The listed Transportation Classification does not address regulatory variations due to changes in package size, mode of shipment or other regulatory descriptors.

US Department of Transportation
Shipping Name: NOT REGULATED

SECTION 15. REGULATORY INFORMATION

US Federal

EPA Registration No. 432-1226

TSCA list

CARBARYL, (1-NAPHTHYL N-METHYLCARBAMATE)	63-25-2
CALCIUM SILICATE	1344-95-2
QUARTZ	14808-60-7
DIATOMACEOUS EARTH	61790-53-2

TSCA 12b export notification

None

SARA Title III - section 302 - notification and information

None

SARA Title III - section 313 - toxic chemical release reporting

CARBARYL, (1-NAPHTHYL N-METHYLCARBAMATE)	63-25-2	1.0%

US States Regulatory

CA Prop65

This product contains a chemical known to the state of California to cause cancer.	QUARTZ	14808-60-7

US State right-to-know ingredients

CARBARYL, (1-NAPHTHYL N-METHYLCARBAMATE)	63-25-2	CA, CT, IL, MA, MN, NJ, PA, RI
CALCIUM SILICATE	1344-95-2	IL, MN, PA, RI
QUARTZ	14808-60-7	IL, MA, MN, PA
DIATOMACEOUS EARTH	61790-53-2	IL

Canadian Regulations

Canadian Registrat. No.

Canadian Domestic Substance List

CALCIUM SILICATE	1344-95-2
QUARTZ	14808-60-7

Environmental

CERCLA

CARBARYL, (1-NAPHTHYL N-METHYLCARBAMATE)	63-25-2	100 lbs

Clean Water Section 307 Priority Pollutants

None

Safe Drinking Water Act Maximum Contaminant Levels

None

International Regulations

EU Classification
None
European Inventory of Existing Commercial Substances (EINECS)

CARBARYL, (1-NAPHTHYL N-METHYLCARBAMATE)	63-25-2
CALCIUM SILICATE	1344-95-2
QUARTZ	14808-60-7

SECTION 16. OTHER INFORMATION

	Health	Flammability	Reactivity	Others
HMIS	2	1	1	
NFPA	3	1	1	

Reason for Revisions: Company name change.

Print Date: 02/05/2003
Supersedes MSDS, which is older than: 02/05/2003

This information is provided in good faith but without express or implied warranty. Buyer assumes all responsibility for safety and use not in accordance with label instructions. The product names are registered trademarks of Bayer AG. Bayer Environmental Science

SIGNAL WORD type is 12pt
KEEP OUT OF REACH OF CHILDREN type is 8pt
STORAGE & DISPOSAL type is 8pt
No type smaller than 6pt

THIS FILE IS NOT PRODUCTION READY

CBX
35 East 21 Street
New York NY 10010
Main 212 404 7970
Fax 212 404 7941
www.cbx.com

SCOTTS ORTHO Elementals			
File	100525_EL_LWK_24oz_r8.ai	Date	25May10
Job No	SC0076	Artist	PD KM pd MM
Version	M1	Design Dir	P Chieffo
Contact	K Klein	Process	Flexo
App(s)	CS3	Output@	100%

INK STATIONS

C M Y K

Pantone 364 C | Pantone 384 C | Pantone 424 C

VARNISH

Match as closely as possible using available inks

Pantone 485 C

MECHANICAL DEVELOPMENT LOG			APPROVALS				
DATE	DESCRIPTION	VERS.	Artist	DD	AC	PRF	PRdr
18Mar10	Mechanical preparation	r1					
05Apr10	Revision per client markup of 5Apr10	r2					
08Apr10	Replaced iron icon per client	r3					
23Apr10	New die	r4					
30Apr10	Revision per client PDF of 29Apr10	r5					
05May10	Relocate iron icon per client screencap	r6					
14May10	revise to new template	r7					
25May10	Revision per client PDF of 20May10	r8					

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For more information please contact:

Dan Hopkins
Pest Management Coordinator
(630) 789-7042
dhopkins@villageofhinsdale.org

Recommended websites:

www.epa.gov

www.beyondpesticides.org

www.pestcide.org

www.spcpweb.org

www.safelawns.org

Hinsdale IPM Highlights

Volume 12, Number 1 Editor and Reporter: Ruta Jensen February 6, 2012

Dr. Orris: Reduce Pesticide Use Wherever Possible

At last year's IPM meeting, Dr. Peter Orris spoke about the health effects of pesticides on the health of humans and animals. He focused on the phenoxy herbicides. Here are some of the points he made:

*The goal should be to control not eradicate pests.
*We are continually learning new effects of pesticides previously thought to be relatively benign.
*There is evidence that chemicals get into our bodies. However, we do not know the effects of many of these chemicals.
*Children and women of reproductive age seem to have higher levels than others. This is a problem especially for growing brains.
*The phenoxy herbicides have dioxins as impurities. Dioxins are extremely toxic and persist in the fat for many years.
*These herbicides affect the endocrine system where very minute amounts of toxin can have large effects on the body.
*Acute toxicity has been shown to affect skin, lungs and the central nervous system. They could cause chronic neurological effects. We don't know, but it is possible that they are partially responsible for the epidemic of learning disabilities, ADHD and autism.
*They have been implicated in non-hodgkins lymphoma and soft tissue sarcomas.
*The government has set tolerances for food crops, but not other uses.

Dr. Orris stated that given all that he knows his recommendation is to reduce pesticide use wherever possible and to use natural controls instead.

EPA Approved Pesticides Have Problems

Two different pesticides have come to my attention in the last month. Both have been shown to have major problems. Both have been approved by the EPA.

Imprelis is an herbicide in the pyridine family. It has been shown to persist in soils for a long time and even in compost. It has also been shown to damage trees. See the attached article from Organic Gardening, Att A. (Clopyralid, an ingredient of Confront that was used in the Village before 2003, was recalled for similar reasons.)

Clothianidin is a pesticide that is used to treat seeds, especially corn and soybeans, before planting. It is extremely toxic to honeybees. See the article from Purdue, Att. B. Sierra Club has asked the EPA to remove clothianidin from use, but so far, the EPA has not acted even though the pesticide only has a provisional approval and there have been questions for years about it and the studies submitted for its approval. See the Sierra Club press release, Att C.

These just add to Dr. Orris' statements that no one knows the effects of pesticides so avoid them whenever possible.

Toxicity of Pesticides

The ingredients of TriPower have been shown to have reproductive effects, neurotoxicity, kidney/liver damage, birth/developmental effects, lower male fertility and to cause non-hodgkins lymphoma. See Attachments D, E, F, and G.

Healthy Parks / Healthy Patients 5K

The eHinsdale newsletter contained information about a fundraiser for Hinsdale Parks and Recreation and the RML Specialty Hospital. The title seems to imply that Hinsdale parks are healthy and that being in the parks and exercising in them will make you healthier.

But that is not the case if we use pesticides! In fact, being in the parks at certain times could make you very ill. And constant exposure to the parks can affect your health.

Hinsdale 2011

The IPM Compliance 2011 Report details a number of useful procedures: aeration, overseeding, soil testing, natural pesticides (corn gluten meal, Burn Out, vinegar) and trying a new ice melt. The sustainable Landscaping project also looks quite promising. Please continue all these efforts to implement IPM procedures and support the staff's efforts to be more informed by attending conferences such as the Safer Pest Control ones.

Thank you for the efforts to reduce pesticides. But it is important to work toward eliminating pesticide use. One pesticide free park is a step in the right direction – can we have more?

Web Sites

There is an abundance of information about IPM and the effects of pesticides on the web. See Attachment H for a current list.

Recommendations

Please see page 2.

Recommendations

I. Continue all the procedures for making healthy turf and continue to explore more:
Aeration: Continue the fall aeration, and add more in the spring.
Overseeding: Overseeding helps fill in holes in the turf.
Soil testing: Testing allows the use of correct fertilizers
Natural pesticides: Continue these as needed to minimize the use of chemical pesticides.
Try new cultivars: Turf type tall fescues have been developed and are said to be good in shady areas.
Expand the use of organic fertilizers: Organics help the soil and soil microorganisms.

II. Take care of areas where turf is not strong. (See the pictures in attachment I.)

Ehret Park: This area is very shady. The mulch by the sign and in a couple of areas has disintegrated. The use of pesticides under the trees hurts them (see TriPower label and MSDS). The use of weed killers in both the fall of 2009 and 2011 does not seem to have helped. If grass does not grow here, either other cultivars that grow in deep shade or some other cultivar should be used. If mulch is desired, it needs to be renewed. (Are other areas in Hinsdale that use mulch in similar shape?)

By the back patio at the lodge at KLM: This area has had bare spots for many years and nothing has changed. Here again, something besides grass needs to be here. It seems that this area gets much use, besides being very shady. I'm sure that visitors to the lodge do not want mud here.

By sidewalks: The pictures show turf torn up around sidewalks at KLM. I have many pictures around sidewalks at KLM and the Memorial Building. Please, take care of these areas so that weeds do not encroach.

It is not consistent with IPM procedures to avoid taking care of problem areas and then to use pesticides to eradicate weeds that come in. Please develop procedures to take care of problem areas before they need weed eradication.

III. Put more IPM information and publicize meetings on the web:
There has been no information about this meeting in the eHinsdale newsletter.
The IPM report is not available on the web. The 2010 report is in the environment Corner which is hidden under Public Services. There is a very good Six Step Natural Lawn Care Plan under Public Services. There should be a more easily found place for this and any other information that will be added! [Attachment H has an up to date list of websites that have IPM information and information about the health effects of pesticides that I have found so far.] Could we also add a video of Dr. Orris' talk from last year?

The citizens of the Village need more information about the bad effects of pesticides and ways of eliminating their use. I still find that even though the parks are getting better, I am often overwhelmed by pesticides on private lawns.

IV. Add more pesticide free parks.

V. Work toward no pesticides on any parks.

Take care of our children and our pets by avoiding any chemical pesticides. This is an important factor in the health of village residents. Pesticides are implicated in cancers and neurologic problems. Attachment J has the drawings that show the effects of pesticides on children that Dr. Orris referred to last year.

List of Attachments:

A: *Imprelis Imperils?,* Organic Gardening Vol 58:6, Oct-Nov 2011, p. 56-7

B: *Researchers: Honeybee deaths linked to seed insecticide exposure*, Purdue University News Service, January 11, 2012, http://www.purdue.edu/newsroom/research/2012/120111KrupkeBees.html

C. Sierra Club Press Release 1-10-12, http://www.sierraclub.org/biotech/whatsnew/whatsnew_2012-01-10.asp

D. *Health Effects of 30 Commonly Used Pesticides*, Beyond Pesticides/NCAMP Fact Sheet http://www.beyondpesticides.org/lawn/factsheets/30health.pdf

E. *Masculinity at Risk: Pesticides and Male Fertility*, Journal of Pesticide Reform, Vol 16, No.2, Summer 1996, http://www.pesticide.org/get-the-facts/ncap-publications-and-reports/general-reports-and-publications/journal-of-pesticide-reform/journal-of-pesticide-reform-articles/masculinity.pdf

F. *Herbicide Factsheet: Dicamba*, Journal of Pesticide Reform, Vol 14, No.1, Spring 1994, http://www.pesticide.org/get-the-facts/pesticide-factsheets/factsheets/dicamba

G. Herbicide Factsheet: Mecoprop (MCPP), Journal of Pesticide Reform, Vol 24, No.1, Spring 2004, http://www.pesticide.org/get-the-facts/pesticide-factsheets/factsheets/mecoprop_mcpp

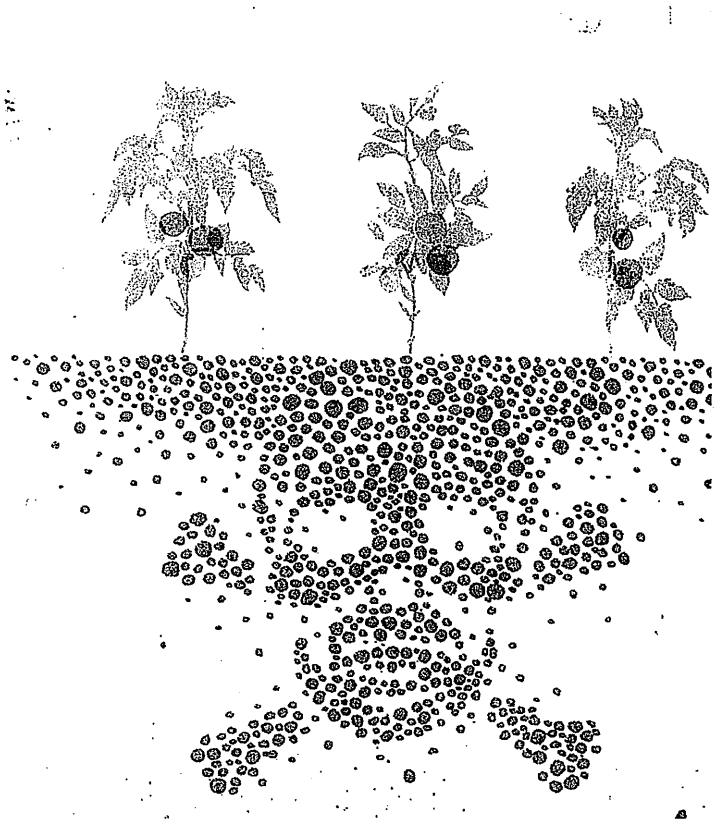
H. List of IPM/Pesticide websites

I. Pictures of Ehret Park and KLM

J. Do Pesticides Affect Learning and Behavior?, http://www.beyondpesticides.org/infoservices/pesticidesandyou/Spring%2004/Pesticides%20Learning%20Behavior.pdf

Imprelis Imperils?

Pesticide residues in compost are damaging plants.



Since 1999, gardeners have experienced serious problems with herbicides that do not readily break down in compost. Residential lawn trimmings, hay and straw, municipal green waste, and cow and horse manure are all common compost ingredients that have become vectors for delivering unwanted chemicals, causing plant damage in home gardens. The offending active ingredients—the part of an herbicide that actually kills weeds—include clopyralid, aninopyralid, and the newest, aminocyclopyrachlor. This last is now attracting attention as the active ingredient in DuPont's brand-named Imprelis.

"These herbicides are all in the pyridine family," says Matthew Ryan, Ph.D., a Pennsylvania State University agroecologist. "They are classified as having a plant growth regulator, which means they kill plants by altering plant hormone levels. Because plants have different hormones than animals—for example, animals don't produce auxin and plants don't produce testosterone—they are generally considered safe for [ingestion by] livestock."

Agroecologists and weed scientists are concerned about the potential misuse of these herbicides because of their relatively long persistence in the environment and potential for injury to nontargeted plants, says Ryan, adding that the companies that make and market them emphasize the products' safety to livestock but aren't doing enough in noting posttreatment problems among plants. Ohio State University researchers found that when grass was treated with aminocyclopyrachlor and composted, it degraded by about 60 percent over 200 days, with plenty of the active ingredient remaining to do damage to susceptible crop plants—including beans, cucumbers, and tomatoes.

Currently, only those with a pesticide applicator's license can apply aminocyclopyrachlor. That includes the new product Imprelis, a broadleaf postemergent herbicide used on turfgrass (including professionally maintained home lawns). An Imprelis label states: "Do not use grass clippings from treated areas for mulching or compost, or allow for collection to compost facilities. Grass clippings must either be left on the treated area, or, if allowed by local yard waste regulations, disposed of in the trash. Applicators must give verbal or written notice to property owners/property managers/residents not to use grass clippings from treated turf for mulch or compost."

The language raised a warning flag to many—commercial composters, landscaping professionals, and home gardeners who depend on the municipal compost stream. In a memo to members, U.S. Composting Council executive director Stu Buckner stated, "One problem is

What's an Organic Gardener to Do?

Compost your own, and beware of outside feedstocks. If you import grass clippings from your neighbors or other sources, be familiar with their lawn-maintenance practices.

Know thy composter. Some commercial composters have stopped taking municipal green waste because of problems with persistent herbicides. If your composter does accept green waste from landscapers, make sure they test each compost batch for herbicide residues.

Get active. Write to the U.S. Environmental Protection Agency and tell them it's time they live up to their name. Write to DuPont and Scotts and ask them how introducing persistent chemicals into the environment lines up with each company's sustainability mission. For contact information, see Find It Here on page 69.

"The industry's rush to put products on the market before they are thoroughly tested has often resulted in unanticipated disaster."

that the warning is on page 7 of a 9-page label, and unfortunately not everyone reads or follows the label. We are requesting [that] the Environmental Protection Agency initiate a special review of the registration due to the likelihood of residual herbicide levels in compost damaging nontarget plants."

This past summer, additional problems were discovered as tree damage and death—mostly to shallow-rooted trees such as spruces and white pines—linked to Imprelis use were reported in more than 11 states from the Midwest to the East Coast.

Still, DuPont and the Scotts Miracle-Gro Company are collaborating to develop and market to homeowners a new combination lawn fertilizer/herbicide containing aminocyclopyrachlor. Additional testing is being conducted, "so that we can provide the clearest guidance possible to consumers regarding the composting of grass clippings," says Lance Latham, spokesman for Scotts.

Meanwhile, a class-action suit against DuPont was lodged by a Pennsylvania homeowner and an Indiana golf course claiming damages for poisoned plants. Then, in early August, as we went to press, DuPont sent a voluntary recall for Imprelis to turf managers and product distributors, stating: "... DuPont is implementing a voluntary suspension of sale of Imprelis herbicide. In addition ... we will soon be conducting a product return and refund program ... We sincerely regret any tree injuries that Imprelis may have caused, and will work with you and all of our customers to promptly and fairly resolve problems associated with our product."

Nonetheless, state agriculture agencies remain concerned that both grass clippings and dead trees contaminated with Imprelis will enter the compost stream despite the product being taken off the shelf.

There was no word on whether DuPont planned to pull other products containing the active ingredient aminocyclopyrachlor—Perspective, Plainview, Streamline, and Viewpoint—from the market.

"The industry's rush to put products on the market before they are thoroughly tested has often resulted in unanticipated disaster," states Eric Vinje, founder of the gardening supply company Planet Natural. "As with similar products, there are no 'safe application' standards; no way to keep these products from moving beyond their point of application." Other than not using them in the first place. —*Dan Sullivan*

PURDUE UNIVERSITY University News Service

Researchers: Honeybee deaths linked to seed insecticide exposure

January 11, 2012

WEST LAFAYETTE, Ind. - Honeybee populations have been in serious decline for years, and Purdue University scientists may have identified one of the factors that cause bee deaths around agricultural fields.

Analyses of bees found dead in and around hives from several apiaries over two years in Indiana showed the presence of neonicotinoid insecticides, which are commonly used to coat corn and soybean seeds before planting. The research showed that those insecticides were present at high concentrations in waste talc that is exhausted from farm machinery during planting.

The insecticides clothianidin and thiamethoxam were also consistently found at low levels in soil - up to two years after treated seed was planted - on nearby dandelion flowers and in corn pollen gathered by the bees, according to the findings released in the journal *PLoS One* this month.

"We know that these insecticides are highly toxic to bees; we found them in each sample of dead and dying bees," said Christian Krupke, associate professor of entomology and a co-author of the findings.

The United States is losing about one-third of its honeybee hives each year, according to Greg Hunt, a Purdue professor of behavioral genetics, honeybee specialist and co-author of the findings. Hunt said no one factor is to blame, though scientists believe that others such as mites and insecticides are all working against the bees, which are important for pollinating food crops and wild plants.

"It's like death by a thousand cuts for these bees," Hunt said.

Krupke and Hunt received reports that bee deaths in 2010 and 2011 were occurring at planting time in hives near agricultural fields. Toxicological screenings performed by Brian Eitzer, a co-author of the study from the Connecticut Agricultural Experiment Station, for an array of pesticides showed that the neonicotinoids used to treat corn and soybean seed were present in each sample of affected bees. Krupke said other bees at those hives exhibited tremors, uncoordinated movement and convulsions, all signs of insecticide poisoning.

Seeds of most annual crops are coated in neonicotinoid insecticides for protection after planting. All corn seed and about half of all soybean seed is treated. The coatings are sticky, and in order to keep seeds flowing freely in the vacuum systems used in planters, they are mixed with talc. Excess talc used in the process is released during planting and routine planter cleaning procedures.

"Given the rates of corn planting and talc usage, we are blowing large amounts of contaminated talc into the environment. The dust is quite light and appears to be quite mobile," Krupke said.

Krupke said the corn pollen that bees were bringing back to hives later in the year tested positive for neonicotinoids at levels roughly below 100 parts per billion.

"That's enough to kill bees if sufficient amounts are consumed, but it is not acutely toxic," he said.

On the other hand, the exhausted talc showed extremely high levels of the insecticides - up to about 700,000 times the lethal contact dose for a bee.

"Whatever was on the seed was being exhausted into the environment," Krupke said. "This material is so concentrated that even small amounts landing on flowering plants around a field can kill foragers or be transported to the hive in contaminated pollen. This might be why we found these insecticides in pollen that the bees had collected and brought back to their hives."

Krupke suggested that efforts could be made to limit or eliminate talc emissions during planting.

"That's the first target for corrective action," he said. "It stands out as being an enormous source of potential environmental contamination, not just for honeybees, but for any insects living in or near these fields. The fact that these compounds can persist for months or years means that plants growing in these soils can take up these compounds in leaf tissue or pollen."

Although corn and soybean production does not require insect pollinators, that is not the case for most plants that provide food. Krupke said protecting bees benefits agriculture since most fruit, nut and vegetable crop plants depend upon honeybees for pollination. The U.S. Department of Agriculture estimates the value of honeybees to commercial agriculture at $15 billion to $20 billion annually.

Hunt said he would continue to study the sublethal effects of neonicotinoids. He said for bees that do not die from the insecticide there could be other effects, such as loss of homing ability or less resistance to disease or mites.

"I think we need to stop and try to understand the risks associated with these insecticides," Hunt said.

The North American Pollinator Protection Campaign and the USDA's Agriculture and Food Research Initiative funded the research.

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Greg Hunt, 765-494-5605, ghunt@purdue.edu (mailto:ghunt@purdue.edu)

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Agriculture News Page (http://www.agriculture.purdue.edu/AgComm/public/agnews/)

ABSTRACT

Multiple Routes of Pesticide Exposure for Honeybees Living Near Agricultural Fields

Christian H. Krupke, Greg J. Hunt, Brian D. Eitzer, Gladys Andino, Krispn Given

Populations of honeybees and other pollinators have declined worldwide in recent years. A variety of stressors have been implicated as potential causes, including agricultural pesticides. Neonicotinoid insecticides, which are widely used and highly toxic to honeybees, have been found in previous analyses of honeybee pollen and comb material. However, the routes of exposure have remained largely undefined. We used LC/MS-MS to analyze samples of

honeybees, pollen stored in the hive and several potential exposure routes associated with plantings of neonicotinoid treated maize. Our results demonstrate that bees are exposed to these compounds and several other agricultural pesticides in several ways throughout the foraging period. During spring, extremely high levels of clothianidin and thiamethoxam were found in planter exhaust material produced during the planting of treated maize seed. We also found neonicotinoids in the soil of each field we sampled, including unplanted fields. Plants visited by foraging bees (dandelions) growing near these fields were found to contain neonicotinoids as well. This indicates deposition of neonicotinoids on the flowers, uptake by the root system, or both. Dead bees collected near hive entrances during the spring sampling period were found to contain clothianidin as well, although whether exposure was oral (consuming pollen) or by contact (soil/planter dust) is unclear. We also detected the insecticide clothianidin in pollen collected by bees and stored in the hive. When maize plants in our field reached anthesis, maize pollen from treated seed was found to contain clothianidin and other pesticides; and honeybees in our study readily collected maize pollen. These findings clarify some of the mechanisms by which honeybees may be exposed to agricultural pesticides throughout the growing season. These results have implications for a wide range of large-scale annual cropping systems that utilize neonicotinoid seed treatments.

Press Release 1-10-12

Press Release – January 10, 2012

New research should nail the coffin lid shut on a toxic bee-killing pesticide
Entire food chain found to be contaminated, from soil to pollen to dead bees

Contact Laurel Hopwood, 216-371-9779 (EST)Tom Theobald 303-652-2266 (MST)
Neil Carman, PhD. 512-288-5772 / cell 512-663-9594 (CST)

The Sierra Club, with over 1.3 million members and supporters, calls on the U.S. Environmental Protection Agency (EPA) to immediately suspend the registration of the insecticide clothianidin, based on new scientific evidence of extensive contamination in bees and soil.

Last week (January 3, 2012) scientists at Purdue University documented major adverse impacts from clothianidin, used as a seed treatment in corn, on honey bee health. The results showed clothianidin present in foraging areas long after treated seed has been planted.

The study raises questions about the long term survival of this major pollinator.

"This research should nail the coffin lid shut on clothianidin", says Laurel Hopwood, Sierra Club's Chairwoman of the Genetic Engineering Action Team. "Despite numerous attempts by the beekeeping industry and conservation organizations to persuade the EPA to ban clothianidin, the EPA has failed to protect the food supply for the American people."

Tom Theobald, a founding member of the Boulder County Beekeeper's Association explains, "In 2010, I got hold of an EPA document revealing that the agency has been allowing the widespread use of this bee-toxic pesticide, against evidence that it's highly toxic to bees. Clothianidin has failed to meet the requirements for registration. It's continued use is in violation of the law."

Upon learning of the EPA's failures, the National Honey Bee Advisory Board, the American Beekeeping Federation and The American Honey Producer's Association urged the agency in a 12/8/2010 letter to cancel the registration of this pesticide. Yet despite the fact that clothianidin had failed a critical life cycle study which was required for registration, the agency responded in a 2/18/2011 letter stating "At this time, we are not aware of any data that reasonably demonstrates that bee colonies are subject to elevated losses due to chronic exposure to this pesticide. EPA does not intend at this time to initiate suspension or cancellation actions against the registered uses of clothianidin. If scientific information shows a particular pesticide is posing unreasonable risk to pollinators, we stand ready to take the

necessary regulatory action."

Neil Carman, PhD, scientific advisor to Sierra Club, is troubled by EPA's complacency. "A huge shoe has dropped. U.S. researchers have documented major adverse impacts from clothianidin seed treatments in corn on honey bee health." Carman further explains "Because of the vital role played by honey bees in crop pollination, honey bee demise threatens the production of crops that produce one-third of American diets, including nearly 100 fruits and vegetables. The value of crops pollinated by bees exceeds $15 billion in the U.S. alone."

Hopwood exclaims, "The time is now for EPA to quit dodging the illusion of oversight and instead, cancel this bee- killing pesticide. If we travel too far down our current path, we could create conditions in our food system much like those that brought down the financial system."

Health Effects of 30 Commonly Used Lawn Pesticides

A Beyond Pesticides/NCAMP Fact Sheet

Pesticide	Cancer	Reproductive Effects	Neurotoxicity	Kidney / Liver Damage	Endocrine Disruptor	Sensitizer / Irritant	Birth Defects
Insecticides							
Acephate	POSSIBLE[1]	X[2]	X[3]			X[2]	
Carbaryl*	LIKELY[4]	X[5]	X[6]	X[2]	X[7]	X[2]	X[8]
Chlorpyrifos^		X[8]	X[6]	X[9]		X[2]	X[8]
Dichlorvos (DDVP)	POSSIBLE[1], X[10]	X[11]	X[2]	X[2]		X[2]	
Malathion*	SUGGESTIVE[12]	X[8]	X[3]	X[2]	SUSPECT[13]	X[8]	X[14]
Trichlorfon		X[2]	X[11]	X[2]		X[2]	X[2]
Herbicides							
Atrazine	POSSIBLE[1], X[3]	X[6]	X[2]	X[2]	KNOWN[13]	X[2]	X[8]
Benfluralin* (Benefin)	SUGGESTIVE[12]			X[6]		X[15]	
Bensulide			X[6]	X[16]	PROBABLE[13]	X[2]	
2,4-D*	UNKNOWN[17], X[2]	X[2]	X[14]	X[2]	X[7]	X[14]	X[2]
DSMA (Disodium Methanearsonate)	POSSIBLE[18]	X[18]		X[18]		X[18]	
Dacthal (DCPA)*	POSSIBLE[1]			X[8]		X[15]	
Dicamba*	UNKNOWN[17]	X[8]	X[8]	X[2]		X[2]	X[3]
Endothall				X[2]		X[2]	
Glyphosate*	X[8]	X[6]		X[14]		X[6]	
Isoxaben	POSSIBLE[1]			X[19]			
MCPA		X[2]	X[6]	X[2]		X[6]	X[2]
MCPP (Mecoprop)*	SUGGESTIVE[12]	X[2]		X[3]		X[2]	X[14]
MSMA	POSSIBLE[18]	X[18]		X[18]			
Pendimethalin*	POSSIBLE[1]	X[6]		X[3]	X[20]	X[16]	
Pronamide	PROBABLE[21] X[10]			X[3, 6]	X[2, 6]	X[2]	
Siduron						X[15]	
Triclopyr	UNKNOWN[17]	X[8]		X[6]		X[6]	X[8]
Trifluralin	POSSIBLE[1]	X[6]		X[2]	PROBABLE[13] X[7]	X[6]	
Fungicides							
Chlorothalonil	LIKELY[4], X[10]	X[8]	X[22]	X[2]		X[6]	
Maneb	PROBABLE[21] X[10]	X[2]	X[15]	X[2]	PROBABLE[13] X[7]	X[2]	X[15]
PCNB (Quintozene)	POSSIBLE[1]			X[2]		X[15]	X[16]
Sulfur						X[2]	
Triadimefon	POSSIBLE[1]	X[10, 3]	X[2]	X[3]	X[20]		X[3]
Ziram	SUGGESTIVE[12]	X[2]	X[15]	X[16]	SUSPECT[13] X[7]	X[2]	
TOTAL	19	21	15	26	11	27	13

X = Adverse effect demonstrated.

BEYOND PESTICIDES

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Rev. 4/05

Source: List of chemicals compiled by Beyond Pesticides from information provided by the General Accounting Office 1990 Report, "Lawn Care Pesticides: Risks Remain Uncertain While Prohibited Safety Claims Continue," U.S. Environmental Protection Agency (EPA) National Pesticide Survey (1990), *Farm Chemicals Handbook* (1989), The National Home and Garden Pesticide Use Survey by Research Triangle Institute, NC (1992), multiple state reports, current EPA Environmental Impact Statements and Risk Assessments, and EPA national sales and usage data.

^ Banned for residential use in 2001, still permitted for use on golf courses and for public mosquito control.
* These pesticides are among the top 10 most heavily used pesticides in the home and garden sector, according to the latest sales and usage data available from EPA (2001).

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[1] EPA weight-of-evidence cancer classification, "possible human carcinogen." U.S. EPA, 2004. Office of Pesticide Programs, List of Chemicals Evaluated for Carcinogenic Potential. July 19, 2004.
[2] Extension Toxicology Network (EXTOXNET) Pesticide Information Profiles, http://ace.orst.edu/info/extoxnet/ghindex.html.
[3] U.S. EPA, 2000. Table 1: Toxicity Data by Category for Chemicals Listed Under EPCRA Section 313. Toxic Release Inventory (TRI) Program. http://www.epa.gov/tri/chemical/hazard_categories.pdf.
[4] EPA weight-of-evidence classification, "Likely to be carcinogenic to humans." Available tumor effects and other key data are adequate to convincingly demonstrate carcinogenic potential for humans. U.S. EPA, 2004. (See Ref. 1 for full citation).
[5] Carbaryl has been shown to be a weak mutagen in humans. In animal studies, carbaryl increased the rate of sperm abnormalities, and decreased sperm counts and function. Frazier, L and ML Hage. 1998. *Reproductive Hazards of the Workplace.* Europe: Wiley. Table 10: Partial List of Reproductive Toxins. http://cfaes.osu.edu/facultystaff/healthsafety/documents/Table10-11-00.pdf.
[6] U.S. EPA. Office of Pesticide Program Reregistration Eligibility Decisions (REDs), Interim REDS (iREDs), and RED factsheets. http://www.epa.gov/pesticides/reregistration/.
[7] Colborn, T, et al., 1994. "Developmental Effects of Endocrine-Disrupting Chemicals in Wildlife and Humans," *Environmental Impact Assessment Review*, vol. 14, pp. 469-489.
[8] Northwest Coalition for Alternatives to Pesticides. Pesticides Factsheets. http://www.pesticide.org/factsheets.html.
[9] New Jersey Department of Health and Senior Services, Right to Know Hazardous Substances Fact Sheets. Available online at http://www.state.nj.us/health/eoh/rtkweb/rtkhsfs.htm#I.
[10] California Environmental Protection Agency, March 2005. Chemicals Known to the State to Cause Cancer or Reproductive Toxicity. Office of Environmental Health Hazard Assessment. http://www.oehha.org/prop65/prop65_list/files/P65single3405.pdf.
[11] U.S. EPA, 1998. Hazard Assessment of the Organophosphates. Hazard ID Committee Report. http://www.epa.gov/pesticides/op/hazidrpt.pdf.
[12] EPA weight-of-evidence cancer classification, "suggestive evidence of carcinogenicity, but not sufficient to assess human carcinogenic potential." U.S. EPA, 2004. (See Ref. 1 for full citation).
[13] Illinois Environmental Protection Agency. *Endocrine Disruptors Strategy*. February 1997.
[14] Beyond Pesticides ChemWatch Factsheets, http://www.beyondpesticides.org/pesticides/factsheets/index.htm.
[15] Gosselin, RE, RP Smith, and HC Hodge. 1984. *Clinical Toxicology of Commercial Products*, 5th edition. Baltimore: Williams and Wilkins.
[16] National Library of Medicine, TOXNET, Hazardous Substances Database, http://toxnet.nlm.nih.gov/.
[17] EPA weight-of-evidence cancer classification, "not classifiable as to human carcinogenicity," due to inadequate evidence or no data. U.S. EPA, 2004. (See Ref. 1 for full citation).
[18] U.S. EPA. 1995. Monosodium Methanearsonate and Disodium Methanearsonate; Toxic Chemical Release Reporting; Community Right-to-Know. Federal Register Environmental Documents. http://www.epa.gov/fedrgstr/EPA-TRI/1995/April/Day-20/pr-13.html.
[19] U.S. EPA. Integrated Risk Information System Database. http://www.epa.gov/iris/.
[20] Colborn, T, D Dumanoski, and JP Myers, 1996. *Our Stolen Future: Are We Threatening Our Fertility, Intelligence and Survival?* New York: Dutton. http://www.ourstolenfuture.org/Basics/chemlist.htm.
[21] EPA weight-of-evidence cancer classification, "probable human carcinogen." There is sufficient evidence in animals and inadequate evidence or no data in humans." U.S. EPA, 2004. (See Ref. 1 for full citation).
[22] Environmental Defense Fund, Scoreboard Database, www.scorecard.org/chemical-profiles/.

● PESTICIDES AND MALE FERTILITY

MASCULINITY AT RISK

Sperm counts in healthy men around the world have fallen about 50 percent in the last 50 years. Detailed studies of how sperm counts have changed over time in a particular area show the same pattern, with a few exceptions. Researchers hypothesize that exposure to toxic chemicals may be an important cause of the decline.

In laboratory tests, researchers exposed pregnant or nursing mother rats to certain chemicals found in pesticide products. This exposure disrupted the hormonal balance in their male offspring and limited the development of their sperm-producing cells, resulting in permanently reduced sperm counts.

Over 50 pesticides are known to disrupt sperm production or male hormones. Some of these pesticides are among the most commonly-used pesticides in the U.S. in both agricultural and household situations. About 200 million pounds of sperm-damaging pesticides are used in agriculture every year, and over half a billion applications of these same pesticides are made in our homes and gardens.

Chemicals that can have so dramatic an effect on our physiology do not belong on our farms, in our communities, or in our homes.

BY CAROLINE COX

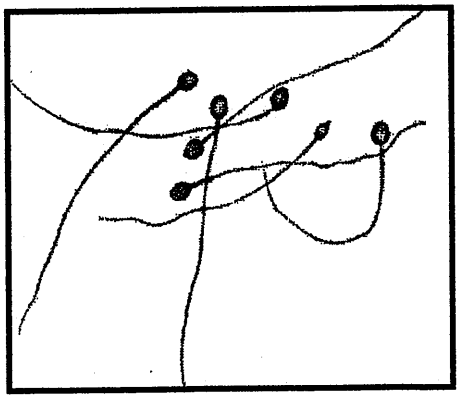
"No New Dads in the Plant,"[1] screams the headline. "The men noticed it first, swapping stories over lunch," continues the article. "None had fathered children lately." The year was 1977, and the men manufactured a pesticide commonly known as DBCP in the central California town of Lathrop. "I started looking around and there weren't any children being born," said a union steward. So begins one of the first chapters in the story of how pesticides impact male fertility.

Since 1977, the story has grown. Not only have scientists collected evidence that human sperm production has declined over the last half century, but the list of pesticides known to disrupt sperm production or male hormones continues to lengthen.

Falling Sperm Counts

In 1992, when four Danish scientists published a study suggesting that sperm counts in men worldwide had declined about 50 percent since 1940,[2] the story made headline news. Sperm are a man's immediate and personal connection to the future of our species, and the disappearance of half of this connection is hard to ignore. "Every man in this room," a wildlife biologist told a hearing before a subcommittee of the U.S. House of Representatives, "is half the man his grandfather was."[3] His audience listened.

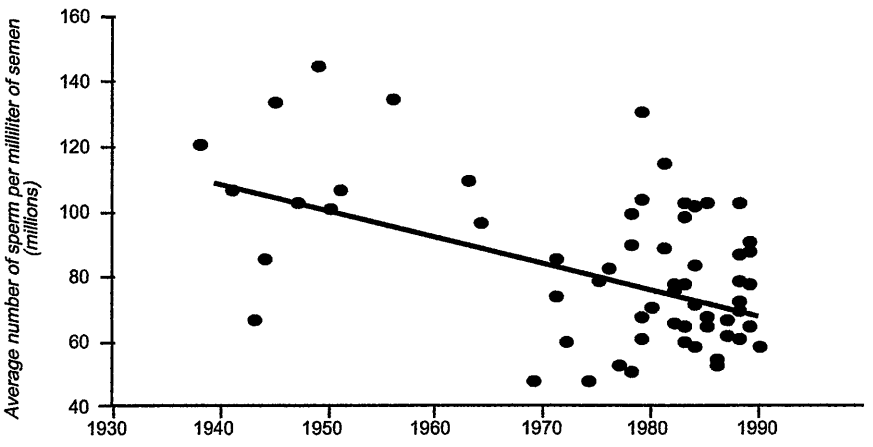
This study, the first widely publicized study of trends in human sperm counts in the last half-century, was authored by research fellow Elisabeth Carlsen and a team of Danish scientists.[2] Carlsen and her colleagues analyzed the results of over 60 studies of sperm counts published between 1938 and 1991 with what they called a "meta-analysis," a statistical analysis that linked results of a large number of independent studies. Using a model which assumed that sperm counts changed over time in a linear way, the results of the meta-analysis indicated average sperm counts declined from 113 million per milliliter (ml) of semen to 66 million per ml during the half century for which they had data. (See Figure 1.) The studies came from around the world,



Sperm are a man's immediate and personal connection to the future of our species.

Caroline Cox is JPR's editor.

Figure 1
Decline in Average Sperm Counts Since 1938



Source: Carlsen, E., et al. 1992. Evidence for decreasing quality of semen during the past 50 years. *Brit. Med. J.* 305:609-613.

Danish researchers combined the results of 61 studies from around the world to show that average sperm counts had dropped about 50 percent in the last 50 years.

with about half from in the U.S. The results had truly profound implications: were such a decline to continue, the human race would be unable to reproduce beginning sometime in the next century.

Supporting Evidence

Since Carlsen's study was published, three other studies have found similar declines in sperm counts in smaller groups of men. Researchers at the University Hospital in Ghent, Belgium, found that counts among their sperm donors had declined about 10 million per ml between 1977 and 1994.[4] At Edinburgh, Scotland's Centre for Reproductive Biology, Stewart Irvine found that median sperm counts among its sperm donors had declined about 40 percent when he compared men born in the 1940s with men born in the late 1960s.[5] At a sperm bank in Paris, France, mean sperm counts among donors declined by about 2 percent per year from 1973 to 1992, for a total decline of 32 percent.[6]

Older studies show a similar pattern: sperm counts in Washington D.C. dropped about 25 percent during the 1980s[7] and sperm counts in Denmark dropped about 25 percent between 1952 and 1972.[8]

Perhaps of greater concern, these studies found that other measures of sperm quality also showed problems; both the amount of semen produced and the vigor of the sperm declined. Carlsen's study found that semen volume decreased about 20 percent. In addition, the proportion of men with sperm counts below 20 million per ml (sperm counts this low are referred to as "subfertile"[2]) tripled. (See Figure 2.) The Belgian study found that both the proportion of abnormal sperm and their mobility decreased during the last 20 years.[4] The French study had similar, and just as unsettling, results.[6]

Particularly telling were comments made by Dr. Pierre Jouannet, one of the scientists involved in the French study. "We always had the idea that there was no decline in sperm characteristics,"[9] he explained. In fact, he and his colleagues began the study because they believed it would overturn Carlsen's hypothesis of a "general decline in the quality and quantity of sperm,— at least, in Paris."[9] The results, showing just the opposite, astonished everyone involved.

Again, older studies show similar results. The Danish study mentioned above found that between 1952 and 1972 the proportion of abnormal sperm increased (from 26 percent to 45 percent) and sperm movement decreased.[8] In Oslo, Norway, the proportion of abnormal sperm rose from 40 percent to 59 percent between 1966 and 1986.[10]

Further evidence of a large-scale problem comes from studies of other male reproductive disorders. The incidence of testicular cancer has increased as much as 3 or 4 times since the 1940s. The incidence of undescended testes and other anatomical abnormalities of male genitals also seems to have increased.[11]

These results, not surprisingly, have not been accepted uncritically. Several researchers felt Carlsen's results could be a statistical artifact, or caused by changes in sperm counting equipment.[12-14] A team of researchers, most of whom were employed by Dow Chemical Company, pointed out that the data used by Carlsen and her coworkers could be analyzed with different statistical models.[15] The three models that seemed to fit the data best showed a 50 percent decline around 1965, but a constant or slightly increasing sperm count in the years since 1970.

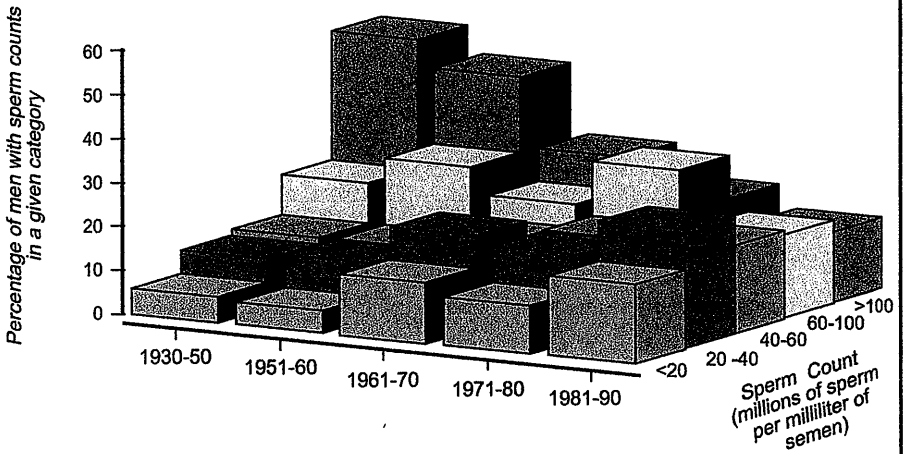
In addition, a recent analysis of sperm counts from three U.S. cities (New York, New York; Roseville, Minnesota; and Los Angeles, California) indicated that sperm counts in those cities had not declined in the last twenty-five years.[16] A study from southern France found no changes between 1977 and 1992.[17] A study of Seattle-area college students found similar results.[18]

Sperm counts vary enormously between countries or regions, between individual men, and even between counts on the same men. Therefore it is not surprising that not all analyses of sperm counts find the same patterns. Whether the decline in sperm counts observed by Carlsen and others is in fact world wide, or whether it includes only certain geographical areas, the overall conclusion is clear: we should act now to protect our reproductive health.

Searching for Causes

Studies of sperm counts over time leave a critical question unanswered. What could account for a precipitous decline in sperm production by otherwise healthy men? Carlsen suggested that environmental causes

Figure 2
Trends in the Distribution of Sperm Counts Since 1938



Source: Carlsen, E., et al. 1992. Evidence for decreasing quality of semen during the past 50 years. *Brit. Med. J.* 305:609-613.

In the last 50 years, the percentage of men with low sperm counts has tripled, while the percentage of men with high sperm counts has declined by a factor of three.

were likely, particularly those toxins that could affect human hormone systems.[2] Richard Sharpe, a research physiologist in Edinburgh, Scotland, developed a more specific hypothesis,[19] and suggested that the decline "is the result of endocrine changes in fetal/prepubertal life [prior to birth or during childhood]."[20]

This hypothesis paints a particularly chilling picture. The endocrine system is made up of the glands and hormones (chemical messengers) that regulate growth, development, behavior, and sexuality. Sharpe hypothesized that this complex system might be disrupted before birth or during childhood by substances acting like natural hormones. The result is a permanent impairment of the reproductive system.

In particular, he hypothesized that hormone disruption at a sensitive time in development could block the development of Sertoli cells, cells within the testes that "nurse" sperm cells as they develop. The number of Sertoli cells sets a cap on the number of sperm which a man is able to produce; therefore a chemical exposure that blocked hormones involved with Sertoli cell development would irreversibly limit sperm production.

The hormones Sharpe thought might be important in determining adult sperm production are follicle-stimulating hormone (FSH) and estrogens. Like most hormones, these have multiple functions in our bodies. Their relevance to sperm production is that FSH in juvenile mammals promotes multiplication of the Sertoli cells. Without enough FSH, fewer Sertoli cells are produced. Levels of FSH are regulated by estrogens; higher levels of estrogen result in lower levels of FSH. So Sharpe hypothesized that synthetic chemicals acting like estrogens might lower levels of FSH, resulting in fewer Sertoli cells and permanently decreased sperm production.

A laboratory test of this hypothesis has been completed. Sharpe and his colleagues studied mother rats who drank water contaminated with two synthetic chemicals, octyl phenol and butyl benzyl phthalate, that are known to act like estrogens.[21] The rats used in the study were pregnant and nursing; the study spanned the interval when their male offspring would be developing Sertoli cells. The results fit Sharpe's hypothesis perfectly: sperm production was reduced (10 to 20 percent) in the offspring of the rats drinking contaminated water and the number of Sertoli cells (as estimated by testes size) was reduced.

The development and growth of the male reproductive system is obviously a complex process. It is therefore not surprising that synthetic chemicals might effect male fertility in more than one way. Earl Gray, a toxicologist with the U.S. Environmental Protection Agency, studied how dioxin (2,3,7,8-tetrachlorodibenzo-*p*-dioxin) exposure of mothers affects sperm production in their male offspring.[22] In both rats and hamsters, a single small exposure (1-2 micrograms per kilogram of body weight) during a sensitive stage of pregnancy resulted in permanent decreases of up to 60 percent in the sperm count of male offspring. Dioxin likely causes this decrease in a completely different manner than the mechanism demonstrated by Sharpe; it appears to affect growth factors rather than involving estrogens.

The Link with Pesticides

All three of the chemicals discussed above are found in pesticide products. Octyl phenol and butyl benzyl phthalate are both used as "inert" ingredients, ingredients used in a pesticide product to make it more efficient or easier to use. Dioxin is a contaminant of at least one currently-used pesticide, the herbicide 2,4-D. This connection leads to several other questions. Are there other pesticides that adversely affect sperm? Has the use of pesticides contributed to the decline in sperm counts? Three different kinds of evidence point to pesticides as part of the problem facing men today:

• **Several organochlorine pesticides have had dramatic impacts on male fertility.** In 1975, a worker from a chemical factory in Hopewell, Virgina visited his family physician for help with persistent headaches, tremors and irritability. Further investigations showed that he, and his fellow workers, were contaminated with chlordecone, an insecticide made at the Hopewell factory, and that only one quarter of the workers at the plant had normal sperm counts. The sperm produced by these workers also did not swim as well as normal sperm. The workers' sperm counts increased over the next five years as medications removed chlordecone from their body tissues.[23]

Dibromochloropropane (DBCP), a soil fumigant, became notorious in the late 1970s because of its ability to reduce or

eliminate sperm production in exposed workers. A 17-year follow-up study of 15 exposed workers found that recovery had occurred in only 6 of them.[24] Workers who were able to father children had mostly girls; less than 20 percent of the children born to men with the lowest sperm counts were sons.[24] In laboratory tests, exposure of pregnant rats to DBCP caused small and abnormal testes in their male offspring.[25]

The story of how a pesticide as toxic as DBCP became widely used, both in the U.S. and abroad, is basically a story of corporate greed. The first toxicology tests on DBCP were done in 1954 and 1955. Even at the lowest doses tested, DBCP caused damage to testes. Shell and Dow Chemical Companies, manufacturers of DBCP, estimated a "safe" exposure level for workers exposed to DBCP, but it was not based on any actual data. When the researchers who had done the toxicology tests produced a product data summary to give customers, Shell advised them to understate hazards and exclude some toxic effects. The manufacturer convinced the U.S. Department of Agriculture to require only mild safety warnings on the labels of DBCP products.[26]

• **Over 50 currently used pesticides have caused problems related to male fertility in laboratory or clinical tests. Some of these pesticides are among the most commonly used pesticides in the U.S.** (See Table 1 for a complete list.) Eight out of the 25 pesticides most extensively used in U.S. agriculture[27] have adversely affected sperm production or the functioning of sex hormones in laboratory animals or humans. Estimated annual use of these chemicals totals nearly 200 million pounds, about 25 percent of total agricultural pesticide use. Seven out of the top ten pesticides used in commercial and industrial situations[27] have similar effects; their use accounts for almost 80 percent of this kind of pesticide use. Similar effects have also been shown by 8 out of the 25 pesticides most commonly used in American households.[28] We make an astonishing five hundred million applications of these chemicals in our homes every year.

• **Pesticide exposure is associated with infertility.** Large-scale studies assessing pesticide exposure and its relationship to infertility have not been done. However, several small studies have demonstrated this relationship. Patients treated at Vienna, Austria's Institute of Sterility Treatment, because they produced little sperm or sperm of low quality, were ten times as likely to work in agriculture as those referred to the clinic for other reasons.[29] In the Netherlands, wives of farmers who applied pesticides took longer to become pregnant, and became pregnant less often, than wives of farmers with less pesticide exposure.[30]

It's Time to Take a Stand

Precaution and prevention must be our watchwords as we respond to the new research regarding declines in sperm production. Sperm are "canaries in the coal mine" that help us begin to understand the many effects that pesticides can have on our health and the health of the wildlife around us. Take the information in this article to the people who make pesticide use decisions in your community, in your state, and in our country. Talk to your school board, your city councilors, your county commissioners, your state legislators, your representative, or your senator. Tell them that for your own health and the health of future generations of both people and wildlife we need to promote alternatives to sperm-damaging pesticides as aggressively as the chemicals themselves have been promoted. Tell them that chemicals having so dramatic an effect on our physiology do not belong in our communities. After all, it's our future.

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Table 1
Currently-used Pesticides Linked to Male Fertility Problems

Pesticide	Type of Hazard	Source
Organophosphate and carbamate Insecticides		
acephate	increased proportion of abnormal sperm in mice	1
azinphos-methyl	atrophied, small, or abnormally shaped testes in birds	2
carbaryl	increased proportion of abnormal sperm in exposed workers, reduced sperm motility (ability to move) in rats	3,4
carbofuran	decreased libido (sexual drive) and sperm number in rabbits, decreased number and motility of sperm in rats	5,6
chlorpyrifos	damage to semen-producing structures in testes in rats, undescended testicles in boys exposed prenatally	7,8
diazinon	atrophied testes, arrested sperm production in dogs	9
dimethoate	decreased sperm number and libido, increased proportion of dead or abnormal sperm in rabbits	10
disulfoton	decreased percentage of "sperm-positive" females in multi-generation rat study	11
fenitrothion	arrested or delayed sperm production in fish	12
malathion	decreased testes weight and activity of testicular enzymes in rats (not completely reversible)	13
methyl parathion	increased proportion of abnormal sperm in rats	14
methomyl	increased proportion of abnormal sperm in mice	15
parathion	inhibited binding of testosterone to its receptor proteins, reduced ability of sperm to fertilize eggs in mice	16,17
phorate	atrophied Leydig (testosterone-producing) cells in gerbils	18
phosphamidon	reduced testes weight in rats, increased proportion of abnormal sperm in mice	19,20
profenofos	decreased sperm number and motility	21
propetamphos	increased proportion of abnormal sperm in mice	22
Synthetic pyrethroid insecticides		
cypermethrin	increased proportion of abnormal sperm in mice	23
deltamethrin	decreased sperm number and libido in rabbits, increased proportion of dead or abnormal sperm in mice	10,24
fenvalerate	increased proportion of abnormal sperm in rats	25
fluvalinate	binds to sex hormone receptors in human genital skin and blood cells	26
d-phenothrin	binds to sex hormone receptors in human genital skin and blood cells	26
permethrin	binds to sex hormone receptors in human genital skin and blood cells	26
resmethrin	binds to sex hormone receptors in human genital skin and blood cells	26
tetramethrin	increased testicular tumors in rats	27
Organochlorine insecticides		
endosulfan	profound sex hormone imbalance in genital organs of male rats	28
	decreased sperm number, increased proportion of abnormal sperm in mice	29
lindane	atrophied testes, decreased sperm production, decreased testes weight	30,31
methoxychlor	decreased sperm number, delayed puberty, abnormal mating behavior in rats	32,33
Other insecticides		
abamectin	increased proportion of abnormal sperm in mice	34
boric acid	increased proportion of abnormal sperm, decreased sperm number and motility in mice	35
Fungicides		
benomyl	decreased testes weight, decreased sperm number, and degeneration of testes in rats	36,37
carbendazim	increased proportion of abnormal sperm, decreased sperm number, some irreversible infertility in rats	38,39
copper oxychloride	atrophied testes, arrested sperm production in chickens	40
copper sulfate	atrophied testes, arrested sperm production in chickens	40
ferbam	increased proportion of abnormal sperm in mice	41
hexaconazole	increased tumors in Leydig (testosterone-producing) cells in rats	27
iprodione	increased testicular tumors in rats	27
mancozeb	increased proportion of abnormal sperm in mice	42
thiram	increased proportion of abnormal sperm in mice	42
vinclozolin	prenatal exposure caused abnormal penis anatomy and abnormal ejaculations in rats	43
ziram	increased proportion of abnormal sperm in mice	42
Herbicides		
asulam	reduced testes weight in dogs	44
atrazine	interferes with testosterone (sex hormone) metabolism and binding in rats	45
benefin	decreased fertility of male rats	46
2,4-D	decreased sperm number and motility, increased proportion of abnormal sperm in exposed farmers	47
	inhibited DNA (genetic material) synthesis in testes of rats	48
	contaminated with 2,3,7,8-TCDD which reduces sperm number in prenatally exposed rats	49,50
glyphosate	decreased sperm number in rats	51
	decreased sperm number and libido, increased proportions of dead and abnormal sperm in rabbits	5
linuron	atrophied testes, decreased sperm number in rats	52
MCPP	decreased synthesis of DNA (genetic material) in testes of mice	48
paraquat	increased proportion of abnormal sperm	53
prometryn	interferes with testosterone (sex hormone) metabolism in rats	45
pronamide	increased testicular tumors in rats, with some effects on the concentration of sex hormones	54
simazine	atrophied testes in sheep	55
sulfometuron methyl	atrophied and degenerated testes in dogs	56,57
Other pesticides		
chromium	decreased sperm number, increased proportion of abnormal sperm in mice	58
methyl bromide	degeneration of testes in rats and mice	59
paclobutrazol	increased tumors in Leydig (testosterone-producing) cells in rats	27

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● HERBICIDE FACTSHEET

DICAMBA

BY CAROLINE COX

Each year in the United States, about 15 million acres of corn, 1.5 million acres of wheat,[1] and 3 million lawns[2] are treated with the herbicide dicamba. While its name is often not commonly recognized, this wide use, together with concerns about its toxicology and its effects on our environment, make it important to scrutinize dicamba's hazards.

Use

Dicamba is a selective herbicide[3,4] and is used to kill broad-leaved plants growing in corn, rights-of-way, and lawns. Several different forms of dicamba are used as herbicides;[5] the dimethylamine salt and the sodium salt are the most common.[6] (See Figure 1.)

Dicamba was first registered in the United States in 1967.[5]

Common dicamba-containing herbicides are manufactured by Sandoz Crop Protection Corp. with trade names Banvel and Banvel GST,[6] and by PBI/Gordon Corp.[7] with the trade name Trimec. (Trimec also contains the phenoxy herbicides 2,4-D and mecoprop.[6,7])

About 5.6 million pounds of dicamba are used annually in U.S. agriculture and almost all of this, about 5 million pounds, is used on corn.[1,8,9] (See Figure 2 for state-by-state agricultural use.) In addition, the U.S. Environmental Protection Agency (EPA) estimates that U.S. households annually use about 3 million dicamba-containing products (in this case, product refers to a single container).[2] (See Figure 3.) In California, where pesticide use reporting is more complete than in most states, the most common uses of dicamba are in corn, in wheat, in landscape maintenance, and on rights-of-way.[10] (See Figure 4.)

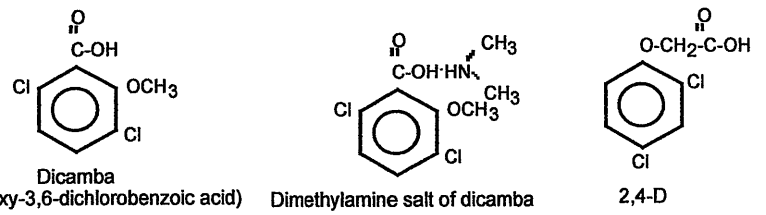
Mode of Action

Dicamba is in the benzoic acid herbicide family, similar in structure and mode of action to phenoxy herbicides like 2,4-D. (See Figure 1.) Like phenoxy herbicides, dicamba mimics auxins, a type of plant hormone, and causes abnormal growth by affecting cell division.[3,4]

Dicamba acts systemically in plants (throughout the entire plant) after it is absorbed through leaves and roots. It is easily transported throughout the plant, and also accumulates in new leaves.[11]

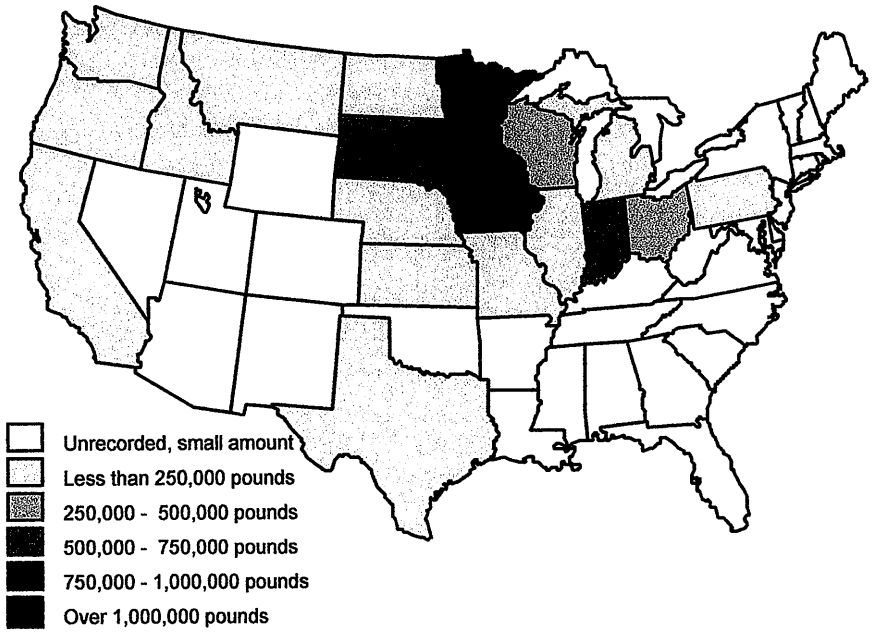
Dicamba also inhibits an enzyme found in the nervous sytem of most animals, acetylcholinesterase.[12] This is the enzyme that is

Figure 1
Dicamba, Its Dimethylamine Salt, and 2,4-D



Dicamba (2-methoxy-3,6-dichlorobenzoic acid) | Dimethylamine salt of dicamba | 2,4-D

Figure 2
Agricultural Uses of Dicamba (1992)



Sources: U.S. Department of Agriculture. National Agricultural Statistics Service. Agricultural Statistics Board. 1993. Agricultural chemical usage: 1992 field crops summary. Washington, D.C. (March.)
California Department of Pesticide Regulation. Information Services Branch. 1993. Summary of pesticide use report data: Annual 1991. Indexed by chemical. Sacramento, CA. (January 25.)

Almost half of the dicamba used in U.S. agriculture is used in Minnesota and Iowa.

■

Caroline Cox is JPR's editor.

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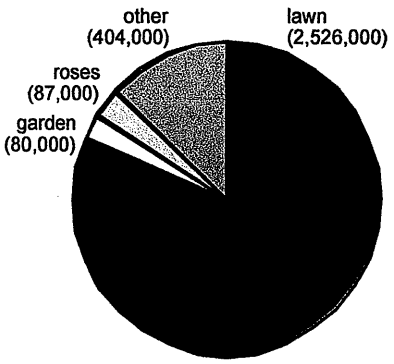
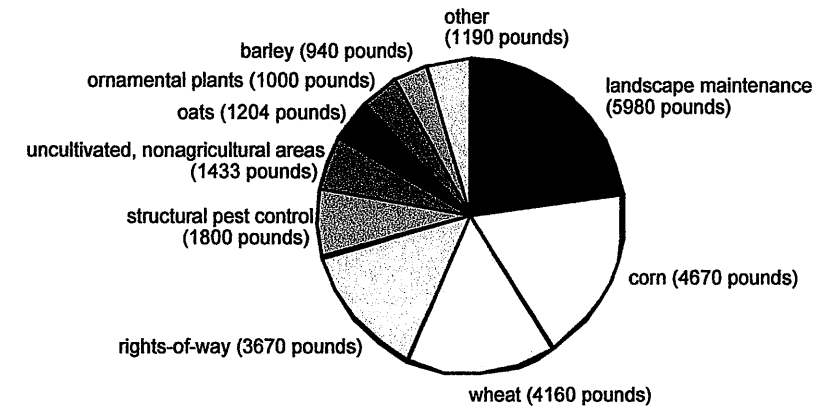
Figure 3
Household Uses of Dicamba



Source: Whitmore, R.W., J.E. Kelly, and P.L. Reading. 1992. National home and garden pesticide use survey: Final report, Volume 1. Executive summary, results, and recommendations. Research Triangle Park, NC: Research Triangle Institute.

Over three-quarters of the dicamba used around U.S. homes is used on lawns.

Figure 4
Uses of Dicamba in California
(pounds per year)



Source: California Department of Pesticide Regulation. Information Services Branch. 1993. Summary of pesticide use report data: Annual 1991. Indexed by chemical. Sacramento, CA. (January 25.)

In California, dicamba is used primarily for landscaping, in corn and wheat production, and along roads, railroads, and other rights-of-way.

inhibited by several common families of insecticides (organophosphates and carbamates). Inhibition of acetylcholinesterase causes a neurotransmitter, acetylcholine, to accumulate and prevents smooth transmission of nerve impulses. In addition, dicamba inhibits the activity of several enzymes in animal livers that detoxify and excrete foreign chemicals.[13]

Acute Toxicity

Dicamba's median lethal oral dose (LD_{50}; the amount that kills 50 percent of a population of test animals) is 1707 milligrams per kilogram (mg/kg) in rats.[14] Female rats are killed by a smaller dose than are male rats.[15]

If we assume humans are as susceptible to dicamba as are laboratory animals, an oral dose of about 3.5 ounces would be required to kill an average-sized (60 kg) human.

Acute exposure to dicamba causes skin irritation and some skin sensitization in laboratory tests, as well as severe eye irritation. The eye damage can be irreversible.[5]

Dicamba also causes other acute effects. Congested lungs, hemorrhages, poor digestion, inflamed kidneys, and engorged livers occured in sheep fed doses of 500 mg/kg.[16]

Acute effects can occur in exposed humans. Symptoms in worker poisonings reported to EPA included muscle cramps, shortness of breath, nausea, vomiting, skin rashes, loss of voice, and swollen glands.[17]

Neurotoxicity

A study of certified pesticide applicators in Minnesota found that a group who applied only herbicides experienced a 20 percent inhibition of the nervous system enzyme acetylcholinesterase (AChE). Researchers were retrospectively able to document that the workers with reduced AChE activity applied significant amounts of dicamba and that they had not applied other chemicals in common. In addition, the researchers demonstrated AChE inhibition in laboratory tests.[12] Neurological effects of dicamba have also been noted in dogs and chickens.[18,19]

Chronic Toxicity

Feeding dicamba to rats for 90 days caused decreases in weight and in the amount of food consumed. Increased dead cells and abnormal live cells were found in exposed rats' livers.[17]

Reproductive Effects

Dicamba's effects on the reproduction of laboratory animals cause concern because of the low doses that cause problems. In rabbits, the most sensitive species tested, doses over 3 mg/kg per day increased the number of fetuses lost or resorbed by the mother.[20]

Exposure of mallard eggs to Banvel caused reduced, stunted growth in the mallard embryos as well as eye malformations.[21]

Concerns about reproductive effects are heightened by a manufacturing contaminant, 2,7-dichlorodibenzo-p-dioxin. (See Figure 5.) In pregnant rats, this contaminant causes abnormalities, suppression of tissue growth, and lesions in fetal hearts.[22]

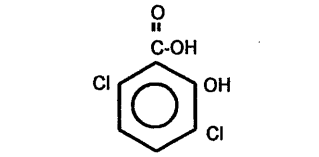
Mutagenicity

A 1990 study showed that injections of dicamba significantly increased the "unwinding rate" (single strand breaks) of the genetic material (DNA; deoxyribonucleic acid) in rat livers. The same study also looked at effects on human blood cell cultures and found that exposure to dicamba caused an increase in unscheduled DNA synthesis as well as a slight increase in sister chromatid exchanges (exchange of genetic material between chromosome pairs).[23]

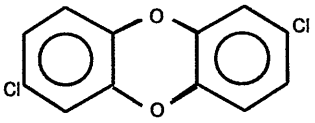
Earlier studies had shown that dicamba caused mutations in two bacteria.[24] Dicamba has also caused mutations in pollen mother cells of the plant *Tradescantia paludosa*.[25] In addition, Gabonil, (dicamba and MCPA), caused an increase in the frequency of chromosome aberrations in barley.[26]

These results are consistent with a 1973 study which found that pesticide applicators using dicamba and other pesticides had a

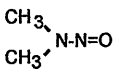
Figure 5
Contaminants, Metabolites, and "Inert" Ingredients Found in Dicamba-containing Products



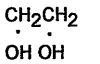
3,6-dichlorosalicylic acid



2,7,-dichlorodibenzo-p-dioxin

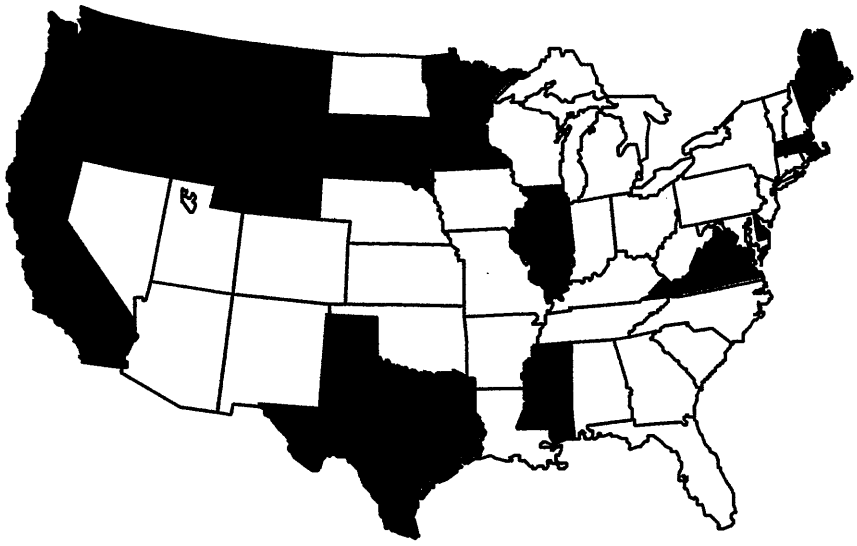


dimethylnitrosamine



ethylene glycol

Figure 6
Dicamba-contaminated Ground Water in the United States



States in black are those in which dicamba-contaminated groundwater has been reported.

Sources: U.S. EPA. Prevention, Pesticides and Toxic Substances. 1992. Pesticides in ground water database: A compilation of monitoring studies: 1971-1991. National summary. Washington, D.C. (September.) Idaho Division of Environmental Quality. 1992. Pesticide concentrations in ground water from laboratory analyses, as of March 1992. Unpublished raw data. Boise ID: Idaho Dept. of Health and Welfare. U.S. Dept. of the Interior. Geological Survey. 1992. Multiple station analyses for pesticides in ground water samples collected by the U.S. Geological Survey in Washington. Unpublished raw data. Tacoma, WA. Oregon Health Division. 1993. Nitrates and organic chemicals found in La Pine area drinking water wells, October 1993. Press release. Oregon Human Resources News. Portland, OR. (October 5.) Domagalski, J.L. and N.M. Dubrovsky. 1992. Pesticide residues in ground water of the San Joaquin Valley, California. *J. Hydrol.* 130:299-338.

Dicamba-contaminated groundwater has been found in 17 states, including all of the Pacific Northwest states.

higher frequency of gaps and breaks in their chromosomes during spray season than during the winter when they were less exposed.[27]

Carcinogenicity

A recent (1992) study of farmers by the National Cancer Institute found that exposure to dicamba approximately doubled the farmers' risk of contracting the cancer non-Hodgkin's lymphoma two decades after exposure.[28]

Two potentially carcinogenic contaminants of dicamba increase concerns about cancer. The contaminant 2,7-dichlorodibenzo-p-dioxin[29] is not as potent a carcinogen as its notorious chemical cousin 2,3,7,8-TCDD, but it has caused leukemia and lymphoma, liver cancer, and cancer of the circulatory system in a 1979 study of male mice conducted by the National Toxicology Program. (No significant increases in cancer were found in female mice or rats of either sex.)[30] Dicamba's dimethylamine salt can be contaminated with dimethylnitrosamine, small amounts of which cause cancer in laboratory animals.[31]

Although dicamba has been registered for use in the U.S. for almost 30 years, only inadequate laboratory tests of dicamba's ability to cause cancer have been submitted to EPA.[29] The quality of some of the tests appears to be seriously lacking. For example, one test was judged inadequate because " tumors were removed periodically."[18]

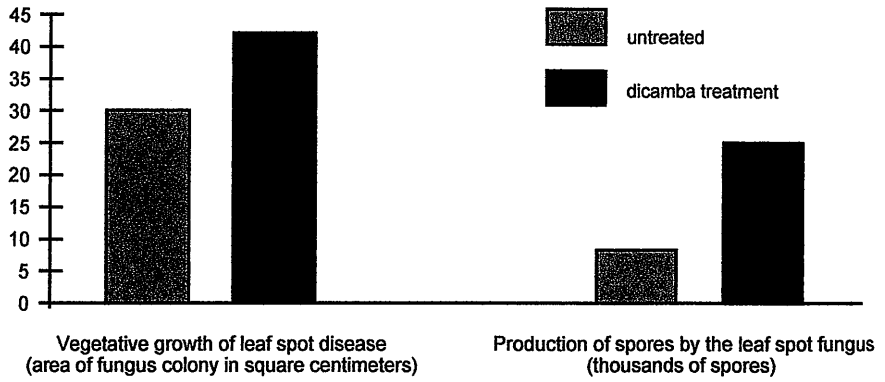
Human Exposure

Humans are exposed to dicamba while they or their neighbors are using the herbicide in the yard or garden, while using it on the job, through drinking of contaminated water, and through eating contaminated food. The result is that large numbers of Americans are contaminated with dicamba. An EPA-funded study found that 1.4 percent of the sample population had dicamba residues in their urine. While this is a small percentage, it means that 2.3 million Americans are contaminated with dicamba.[32]

Household use: Americans make an estimated 6 million applications annually of dicamba-containing herbicides.[2] Because these applications are made to heavily-used areas like lawns and gardens, the potential for exposure of household residents is high. Dicamba volatilizes (evaporates) easily[33] from plant surfaces, particularly when temperatures are over 85°F. Under agricultural conditions, these vapors can drift up to 5 or 10 miles; thus there is potential for contamination following a neighbors' use of the chemical.[34]

Occupational use: A study of two crews using truck-mounted and hand-held sprayers to apply dicamba found dicamba residues in air samples from the truck cab, on the drivers' and applicators' hands, and in urine samples. Dermal exposure (through the skin) was responsible for more contamination than breathing of contaminated air, according to the researchers. Interestingly, the highest residues were measured in urine from a driver,

Figure 7
Increase in the Severity of a Plant Disease Caused by Dicamba Treatment



Source: Hodges, C.F. 1992. Vegetative growth and sporulation of Bipolaris sorokiniana on infected leaves of *Poa pratensis* exposed to postemergence herbicides*Can. J. Bot.* 70:568-570.

Leaf spot, a disease of bluegrass, grows faster and produces more spores following dicamba treatment of the grass.

although sprayers did all of the mixing, loading, and hand-spraying. Residues were still detectable at the end of the study (72 hours after spraying) and the authors note that this means that dicamba levels in workers would rise if they were applying dicamba daily during a five-day work week.[35] In addition, cholinesterase inhibition following use of dicamba has been measured in pesticide applicators.[12]

Contaminated water: Dicamba is "relatively water-soluble" and "mobile in soils."[36] This means that it is likely to contaminate both ground and surface water. In a study that compared soil mobility of 40 pesticides, dicamba was one of three with the highest mobility;[37] these results are consistent with another study of 26 pesticides, in which dicamba was more water soluble than all but three.[38] In two studies, dicamba was adsorbed (held to soil particles) less than the other pesticides tested, even though one was atrazine, a pesticide that has caused problems because of its tendency to contaminate water.[38,39]

Tests for dicamba contamination in water are consistent with these observations. Dicamba has been found in the drinking water supplies of Cincinnati, Ohio; New Orleans, Louisiana; Philadelphia, Pennsylvania; and Seattle, Washington.[40] It has also been found in ponds, rivers, and lakes in the U.S. and Canada.[40,41,42] Certain studies have found dicamba contamination to be pervasive. For example, a study of the Padilla Bay, Washington watershed found dicamba at all but one of the sampling stations.[43] A study of two Canadian watersheds found dicamba throughout the sampling period[44] and a study of a third Canadian watershed found dicamba residues in 95 percent of the snowmelt samples tested.[45] (The following year, when herbicide use by local farmers was lower because of drought, no dicamba was found in the snowmelt.) EPA's water quality database indicates about one-third of the surface water samples analyzed contained dicamba.[19] In addition, dicamba has been found in the effluent from sewage treatment plants in Chattanooga, Tennessee and Lake Tahoe, California.[40]

Dicamba has also been found in groundwater in Msec, Czechoslovakia;[46] Ontario[47] and Saskatchewan,[45] Canada; and in 17 states in the U.S.[38,48-51] (See Figure 6.)

Contaminated food: Dicamba residues have been found on sweet corn,[52] tomatoes,[52] and wheat (both the straw and the grain).[53]

Effects on Wildlife

Fish: Although dicamba is characterized as "slightly toxic" or "practically nontoxic" to fish,[5] there are wide variations in its acute toxicity. For example, one study found that the concentration of dicamba required to kill half of a test population (called the LC_{50}) of bluegill was 600 parts per million (ppm). In the same study, researchers determined that if the herbicide was adsorbed onto vermicullite, it was 30 times more toxic.[54] In another study, no effects on yearling coho salmon were observed at concentrations of dicamba up to 100 ppm. However, yearling coho were killed by much smaller doses (0.25 ppm) during a seawater challenge test which simulates their migration from rivers to the ocean.[55] In addition, acute toxicity varies widely among fish species. For example, rainbow trout are killed by concentrations less than a tenth as great as those that kill mosquito fish.[54]

The toxicity to fish of dicamba-containing herbicides may be increased by the products used with them. For example, in 1992, forty fish were killed in Douglas County, Oregon, by the adjuvant added to Weedmaster, an herbicide containing dicamba and 2,4-D.[56]

Little is known about effects on fish other than acute toxicity.

Other Aquatic Organisms: Dicamba's toxicity to aquatic organisms smaller than fish shows similarities to its toxicity to fish. It is characterized as "practically nontoxic"[5] to aquatic invertebrates and, as an herbicide, it would not be expected to be acutely toxic to aquatic animals. However, tests show wide variations among species. For example, the crustaceans seed shrimp, glass shrimp, and fiddler crabs all are killed by concentrations over 100 ppm. However, other crustaceans (water fleas and amphipods) are killed by concentrations a tenth as much or less (3.9 - 11 ppm).[54] Little is known about effects on aquatic invertebrates other than acute toxicity.

Effects on Nontarget Plants

Since dicamba can damage or kill most broad-leaved plants, any unintended exposure can have important consequences. These effects have been studied mostly in agriculture and little is known about impacts on native plants.

Drift: Drift of dicamba occurs when it moves during or after application to a different site. The following effects have all been documented as a result of dicamba drift: abnormal leaf growth, floral development, and yield in dry beans;[34] reduced yield, reduced

quality, and increased skin ulcers in potatoes;[57,58] reduced yield, reduced sugar production, and increased sugar losses after harvest in sugar beets;[59] and reduced plant height and yield in soybeans.[60] Drift in amounts as low as 1 gram per hectare (about 0.01 ounces per acre) can damage susceptible crops. This is less than a hundredth of the typical agricultural application rate (2 to 4 ounces per acre).[61] Widespread damage from drift has occured when applications are made when temperatures are over 85 degrees.[34]

Plant diseases: Treatment of bluegrass (*Poa pratensis*) with dicamba under greenhouse conditions caused an increase in growth and sporulation of the fungus *Bipolaris sorokiniana*, the cause of a leaf spot disease of bluegrass. (See Figure 7.) Field studies showed consistent results.[63] Dicamba treatment also increases the incidence of another disease, take-all infection of winter wheat, in field experiments.[63]

Effects on germinating seedlings: Researchers studying red oak tree regeneration following clear-cutting of Pennsylvania forests documented that applications of dicamba reduced germination of oak seedlings.[64] The effects of dicamba on germination of seeds from other trees or from herbaceous plants do not appear to be well studied.

Soil fertility: L-asparaginase is an enzyme found in soil microbes that is important in soil nutrient cycling and nitrogen mineralization. In Iowa agricultural soils applications of Banvel reduced L-asparaginase activity between 8 and 17 percent, depending on soil type. Researchers believe that this could "lead to a reduction in the amount of N [nitrogen] derived from soil organic material" and thus impact soil fertility.[65] Dicamba is also toxic to two nitrifying bacteria[66] and two algae thought to "contribute significantly to the processes involved in soil fertility."[67]

Persistence

Dicamba's persistence increases its potential for effects on humans, other animals, and plants. While its half-life (the time required for one-half of a dicamba application to break down) typically is between one and six weeks,[5] it can persist much longer. In field studies, dicamba's persistence has been as long as 12 months (the duration of the study) in a Florida oak and pine forest[68] and almost 13 months in Nova Scotia agricultural soils.[69] The half-life of dicamba increases as temperatures decrease; the half-life at 40°F is over 6 times the half life at 80°F.[70] Dicamba also persists longer in dry soils than in wet soils.[71]

Secret "Inert" Ingredients

Most dicamba-containing herbicides contain ingredients that the pesticide manufacturer calls trade secrets. These ingredients are called "inerts," although they are neither biologically or chemically inert. Almost all of the toxicology and environmental fate testing required by EPA for the registration of dicamba is done with dicamba alone, not with the complete herbicide formulation (active ingredient + "inerts") as it is sold and used.

Trimec, for example, is almost 60 percent "inert" ingredients. Fallowmaster, containing a mixture of dicamba and glyphosate, is over 75 percent "inert" ingredients, and Banvel is almost 40 percent "inerts."[6]

The identity of most of these "inert" ingredients is not publicly available. Several, however, have been identified. Fallowmaster and Banvel CST contain ethylene glycol.[6] (See Figure 5.) Acute exposure to ethylene glycol causes incoordination, slurred speech, convulsions, rapid heart beat, cardiac arrhythmias, and degeneration of kidney cells. Chronic effects include some delayed nervous system damage, "external malformations" in fetuses of laboratory animals exposed to ethylene glycol, and a decrease in male fertility (also in laboratory animals).[72] Fallowmaster also contains a trade secret surfactant classified as "hazardous" by the federal Occupational Safety and Health Administration.[6]

Contaminants

Dicamba is contaminated during its manufacture with 2,7-dichlorodibenzo-p-dioxin. In addition, dimethylamine salts of dicamba can also be contaminated with dimethylnitrosamine.[29] For toxicological concerns about these contaminants, see "Reproductive Effects" and "Carcinogenicity," p. 31. Dicamba products can also be contaminated with up to 20 percent of 3,5-dichloro-2-methoxy benzoic acid, an isomer of dicamba. This isomer is retained longer than dicamba in the bodies of laboratory animals.[73]

Summary

Dicamba is a selective herbicide used to kill unwanted broadleaf plants in corn and wheat, along rights-of-way, and in lawns. Its chemical structure and mode of action in plants in similar to that of the phenoxy herbicides.

In humans, exposure to dicamba is associated with the inhibition of the nervous system enzyme acetylcholinesterase and an increased frequency of a cancer, non-Hodgkin's lymphoma. In laboratory animals, exposure to dicamba has caused decreases in body weight, liver damage, an increased frequency of fetal loss, and severe, sometimes irreversible eye damage. Dicamba has caused genetic damage in human blood cells, bacteria, and barley.

Dicamba can be contaminated with cancer-causing nitrosamines and a dioxin which has been shown to cause birth defects and several cancers in laboratory animals.

Dicamba is mobile in soil and has contaminated rivers, ponds, and groundwater. In the U.S., dicamba-contaminated groundwater has been found in 17 states.

Dicamba volatilizes (evaporates) easily and has been known to drift for several miles following applications at high temperatures.

Dicamba can inhibit some of the organisms important in soil nutrient cycling and thus impair soil fertility. Its use has also been associated with an increase in the frequency of some plant diseases.

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● HERBICIDE FACTSHEET

MECOPROP (MCPP)

Mecoprop (MCPP) is a common lawn care herbicide. The U.S. Environmental Protection Agency estimates that 5 million pounds are used every year on U.S. lawns. It is typically sold in products that are combinations of several related herbicides and as "weed and feed" products.

Part of the phenoxy herbicide chemical family, mecoprop kills plants by imitating naturally occurring plant growth hormones.

Symptoms of exposure to mecoprop include burning skin and eyes, nausea, dizziness, and headaches.

In laboratory tests, mecoprop has inhibited the synthesis of DNA (the molecules that contain genetic information), interfered with blood clotting, and inhibited the production of important components of the immune system.

Laboratory tests using a commercial mecoprop-containing herbicide showed that the fertility of mice who drank water contaminated with low levels of the herbicide was less than that of mice who drank uncontaminated water. Even the lowest dose level tested in this experiment reduced litter size.

A regional study in Canada found that exposure to mecoprop was associated with an increased risk of the cancer non-Hodgkin's lymphoma.

Mecoprop is frequently found in urban streams. One study (done in King County, Washington) found mecoprop in every urban stream sample analyzed.

In both greenhouse and field studies, mecoprop has caused plant diseases to infect more plants or produce more spores.

BY CAROLINE COX

Mecoprop, also known as MCPP (see Figure 1), is one of the most commonly used lawn care herbicides in the U.S. According to the U.S. Environmental Protection Agency (EPA), over 3 million applications,[1] totalling 5 million pounds,[2] of mecoprop are used in yards and gardens every year. Only two popular yard and garden herbicides (2,4-D and glyphosate) are used more widely.[2]

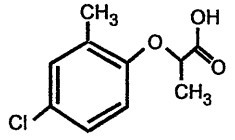
As a selective herbicide that targets broadleaf plants, mecoprop typically is used to kill broadleaf plants growing in lawns and turf. Farmers also use it to kill these weeds in cereal crops.[3]

Mecoprop is often sold in combinations of several related herbicides (including 2,4-D, dicamba, or MCPA).

■

Caroline Cox is NCAP's staff scientist.

Figure 1
Mecoprop (MCPP)



(2-(2-methyl-4-chlorophenoxy) propionic acid)

It is also sold in "weed and feed" products, in which several herbicides are combined with fertilizers. Many major pesticide companies market mecoprop-containing products for home lawns, and there are also products designed for lawn care professionals and turf managers. Mecoprop is sold under a wide array of brand names.[4]

Mecoprop's ability to kill plants was first reported in 1956. It was registered for use in the U.S. in 1964.[5]

Mode of Action

Mecoprop belongs to the phenoxy herbicide family. Its better-known chemical relatives include 2,4-D and 2,4,5-T. Like all herbicides in this chemical family, mecoprop imitates naturally occurring plant growth hormones called auxins. It causes shoots of broadleaf plants to grow in an elongated and distorted manner. About a week after exposure, the plant collapses, withers, and dies.[3]

Inert Ingredients

Like most pesticides, commercial mecoprop herbicides contain ingredients in addition to mecoprop which, according to U.S. pesticide law, are called "inert."[6] In general, they are not identified and not included in most of the testing required in order to register these pesticides.[7] Hazards of some inerts in commercial mecoprop herbicide products are summarized in

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"Inert Ingredients," at right.

Symptoms of Exposure to Mecoprop

Symptoms reported by state health agencies investigating incidents when people were exposed to mecoprop-containing herbicides include red and burning skin, blistered skin, tearing, burning and irritated eyes, blurred vision, nausea,[8] dizziness, headaches, chest pain, and difficulty breathing.[9]

All these incidents involved herbicides that contained 2,4-D in addition to mecoprop. Most also contained dicamba.[8,9] These combinations are typical of mecoprop-containing herbicides.

According to the Health and Consumer Protection Directorate-General of the European Commission, mecoprop is irritating to skin and severely irritating to eyes.[10]

Ability to Cause Genetic Damage

The National Institute for Occupational Safety and Health labels mecoprop as a "mutagen"[11] because it inhibited the synthesis of DNA in a laboratory study of mice.[11] DNA is the "molecular basis of heredity,"[12] the molecules that contain genetic information. A single dose of mecoprop reduced DNA production by 60 percent.[13] (See Figure 2.)

In addition, tests conducted for a mecoprop manufacturer as part of the process of registering it as a pesticide, showed other types of genetic damage. These included chromosome damage in bone marrow cells in hamsters and human blood cells, as well as a kind of genetic damage called sister chromatid exchanges in hamster bone marrow cells.[14] (Sister chromatid exchanges are exchanges of DNA within a chromosome as it duplicates.[15])

Liver and Kidney Damage

In 1994, EPA listed mecoprop as a toxic chemical under the Emergency Planning and Community Right-to-Know Act because of its toxicity to the liver and kidneys.[16] In a three month feeding study with rats, mecoprop doses of 9 milligrams per kilogram (mg/kg) of body weight per day caused a change in liver and kidney weights.[17]

Anemia

Exposure to mecoprop has caused the development of anemia in tests with laboratory animals. As part of mecoprop's registration process, a pesticide manufacturer sponsored two studies with dogs. In one, dogs were fed mecoprop for 12 months; in the other, for three months. In both studies, the amount of hemoglobin in the dogs' blood decreased at doses of about 20 mg/kg.[14] Hemoglobin is the oxygen-carrying molecule in the blood, and deficiencies in hemoglobin result in anemia.[12]

Blood Clotting

Researchers at the University of Kuopio (Finland) noticed that bleeding is a symptom of poisoning by phenoxy herbicides. They then studied the effects of eight of these herbicides including mecoprop on "platelet

INERT INGREDIENTS

Hazards posed by inert ingredients in household mecoprop-containing herbicides[1] include the following:

Morpholine is a severe eye and skin irritant. It is labeled as a "mutagen" by the National Institute for Occupational Safety and Health because it caused genetic damage in laboratory tests. It also damaged the liver and kidney.[2]

8-hydroxyquinoline sulfate is labeled as a "mutagen" by the National Institute for Occupational Safety and Health because it caused genetic damage in human blood cells.[3]

Methyl carbitol reduced fertility in laboratory tests.[4]

Hexylene glycol is a severe eye irritant. It also reduced the functioning of the kidneys and caused muscle weakness in laboratory tests.[5]

Quartz silica is classified as a carcinogen by the International Agency for Research on Cancer. The National Institute for Occupational Safety and Health labels it as a "mutagen" because it caused genetic damage in laboratory tests.[6]

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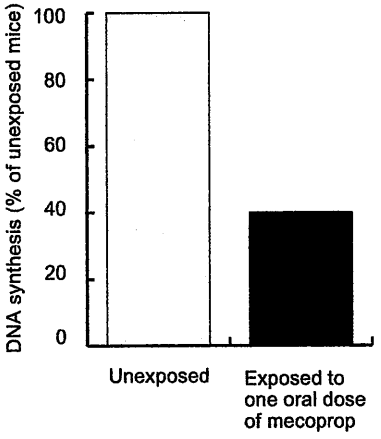
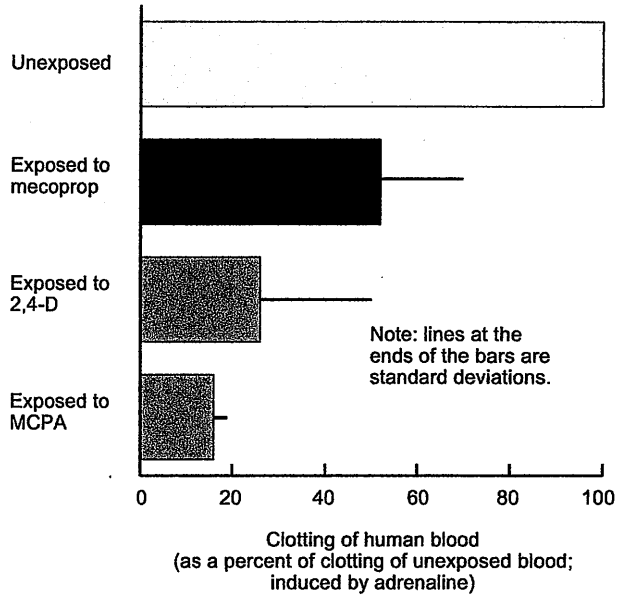
Figure 2
Genetic Damage Caused by Mecoprop



Source: Seiler, J.P. 1979. Phenoxyacids as inhibitors of testicular DNA synthesis in male mice. *Bull. Environ. Contam. Toxicol.* 21:89-92.

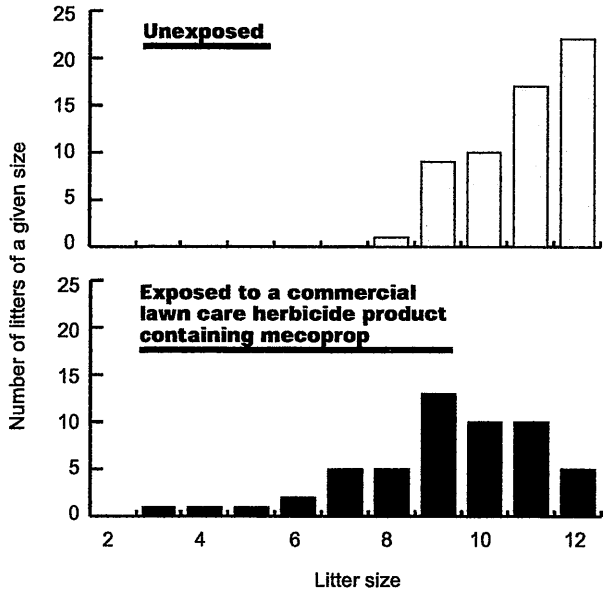
In a study of mice, mecoprop inhibited synthesis of DNA, molecules that carry genetic information.

Figure 3
Effect on Blood Clotting



Source: Elo, H.A., T. Luoma, and P. Ylitalo. 1991. Inhibition of human and rabbit platelet aggregation by chlorophenoxy herbicides. *Arch. Toxicol.* 65:140-144.

Figure 4
Effect on Fertility



Source: Cavieres, M.F., J. Jaeger, and W. Porter. 2002. Developmental toxicity of a commercial herbicide mixture in mice: 1. Effects on embryo implantation and litter size. *Environ. Health Persp.* 110:1081-1085.

Two toxicological problems identified in laboratory tests with mecoprop are disruption of blood clotting and reduced fertility. In samples of human blood, clotting is inhibited when the blood was exposed to mecoprop. In another study, pregnant mice given water with low levels of a lawn care herbicide that contained mecoprop had fewer offspring than mice given uncontaminated water.

aggregation" in human blood. Platelets are a component of blood that assists in clotting. Results of this study showed that concentrations as low as 1 part per million of mecoprop inhibited clotting. Other herbicides commonly used in combination with mecoprop had the same effect.[18] (See Figure 3.)

Effects on Reproduction

New research has demonstrated that exposures to small amounts of mecoprop-containing herbicides can reduce fertility in laboratory animals. Zoologists at the University of Wisconsin exposed pregnant mice to a commercial lawn care herbicide containing mecoprop, 2,4-D, and dicamba in the animals' drinking water. They found that litter size was reduced even at the lowest dose level tested in this experiment, 0.004 mg/kg per day. In unexposed animals, 12 was the most common litter size; in exposed animals this number dropped to 9 or 10.[19] (See Figure 4.)

Mecoprop's ability to reduce fertility in laboratory animals had also been demonstrated in a study done in the 1980s in Germany.[11]

Carcinogenicity (Ability to Cause Cancer)

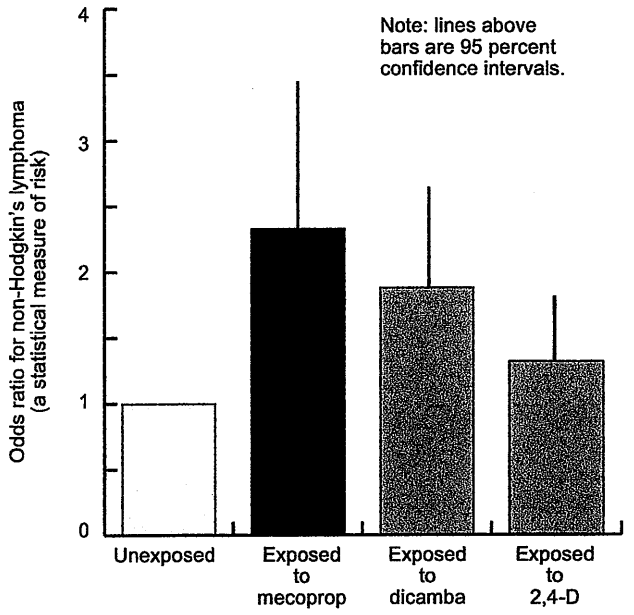
The link between exposure to phenoxy herbicides, including mecoprop, and cancer has been controversial for decades. In 1987, based on a series of studies of people who had been occupationally exposed to these herbicides, the International Agency for Research on Cancer (IARC) classified phenoxy herbicides as "possibly carcinogenic to humans" (IARC's Group 2B). IARC has not updated its classification since then.[21]

Recent research supports concerns about the carcinogenicity of mecoprop. In 2001, scientists at the University of Saskatchewan and several Canadian cancer institutes compared pesticide use by hundreds of Canadian men diagnosed with the cancer non-Hodgkin's lymphoma (NHL) with pesticide use by a comparison group of men who didn't have cancer. The men lived in six Canadian provinces and were exposed to mecoprop either at work or at home. They found that "the risk of NHL was statistically significantly increased"[22] by exposure to three phenoxy herbicides: mecoprop, 2,4-D, and dicamba. The odds ratio (a statistical measure of the increased cancer risk) was over 25 percent larger for mecoprop than for the other two phenoxy herbicides.[22] (See Figure 5.)

Effects on Immune System Function

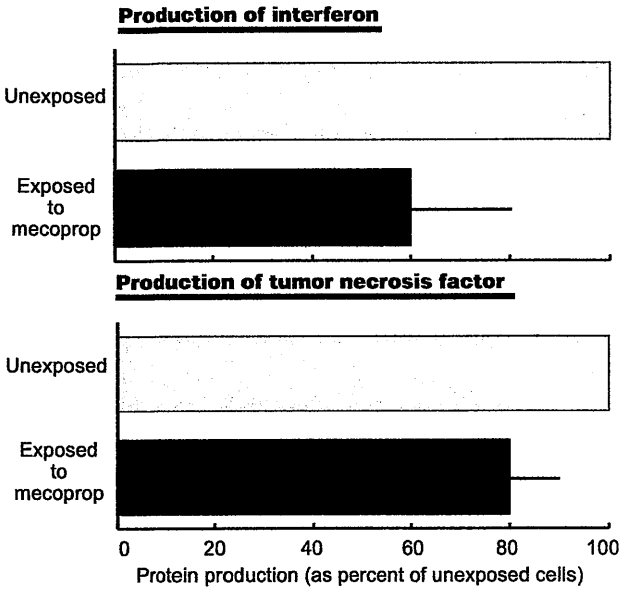
One "sensitive indicator for monitoring perturbation [disturbance] of the immune system" is the production of proteins that are used by the immune system to protect us from disease.

Figure 5
Effect on Cancer Risk



Source: McDuffie, H.H. et al. 2001. Non-Hodgkin's lymphoma and specific pesticide exposures in men: Cross-Canada study of pesticides and health. *Cancer Epid. Biomarkers Prev.* 10:1155-1163.

Figure 6
Effect on Immune System Function



Note: lines at the ends of bars are standard deviations.

Source: Hooghe, R.J., S. Devos, and E.L. Hooghe-Peters. 2000. Effects of selected herbicides on cytokine production in vitro. *Life Sci.* 66: 2519-2525.

Mecoprop exposure has also been linked with cancer and immune system problems. In a Canadian study, exposure to mecoprop (and other herbicides with which it is commonly used) increased the risk of the cancer non-Hodgkin's lymphoma. In a second study, toxicologists working with human blood cells found that production of two important components of the immune system is inhibited by mecoprop.

According to toxicologists from the Flemish Institute for Technological Research and the Free University of Brussels (Belgium), mecoprop has this kind of effect.[23] In human white blood cells, these toxicologists showed that mecoprop inhibited production of interferon,[23] an antiviral protein,[12] and tumor necrosis factor,[23] a protein that causes destruction of some tumor cells and activates white blood cells.[12] (See Figure 6.)

Water Contamination

During the 1990s, the U.S. Geological Survey began a monitoring program, the first of its kind, looking for pesticides in rivers and streams across the U.S.[24] Because mecoprop was not one of the pesticides analyzed in this program,[25] there are no national data about the extent of mecoprop contamination of rivers or streams. However, local monitoring efforts indicate that contamination of streams and rivers with mecoprop may be startlingly common. For example, in urban streams in King County, Washington, a collaboration between the county, the state Department of Ecology, and USGS found mecoprop in every sample taken during spring rainstorms.[26] In Bellingham, Washington, the Department of Ecology found that mecoprop was the third most frequently detected pesticide (out of 19 total) in an urban stream.[27] An Environment Canada study of wetlands in Saskatchewan, Canada, found that mecoprop was one of the most commonly detected herbicides.[28] A second Canadian study, done at the Lethbridge Research Centre, found that mecoprop contaminated rainfall, particularly in urban areas.[29]

One of the reasons that mecoprop often contaminates water is that its chemical characteristics make it very mobile in soil. According to the Oregon State University Extension Service, mecoprop's "pesticide movement ranking' is high.[30]

While there are likely to be many sources of the mecoprop that contaminates water in a particular community, golf course mecoprop use is one identified source of contamination. Three different types of studies all showed that mecoprop contaminates the water leaving treated golf courses: intensive monitoring of a single golf course, extensive monitoring of multiple golf courses within a community, and measurements conducted on simulated golf courses. The studies were conducted by scientists at the University of Georgia, the U.S. Department of Agriculture, the Tokyo Metropolitan Research Laboratory of Public Health, and the Tokyo College of Pharmacy.[31,32]

Effects on Aquatic Ecosystems

Several important components of aquatic ecosystems are harmed by mecoprop. Biologists at the University of Hull (United Kingdom) showed that

mecoprop is toxic to several species of freshwater bacteria that can play key roles in purifying water.[33] Diatoms, plankton that are abundant in freshwater and marine ecosystems,[34] are also sensitive to mecoprop. Studies submitted to EPA as part of mecoprop's registration as a pesticide showed that a concentration of 17 parts per billion kills diatoms.[35] Diatoms are ecologically significant: they account for about a quarter of all photosynthesis, are a major food resource for aquatic animals, and are a major source of atmospheric oxygen.[34]

Effects on Birds

Use of mecoprop can impact birds when the herbicide kills plants that provide habitat for insects used as food by birds. A study by The Game Conservancy Trust (United Kingdom) showed that insects used as food by juvenile birds were less than half as abundant in areas treated with mecoprop (combined with two other broadleaf herbicides) than they were in untreated areas.[36]

Effects on Plant Diseases

Both field and greenhouse experiments have demonstrated that mecoprop can promote plant disease.

Scientists at the ARC Weed Research Organization showed that treatment of winter wheat with mecoprop increased the incidence of take-all disease by 66 percent.[37]

More recently, an Iowa State University horticulturist showed that a leaf spot fungus produced more spores on greenhouse-grown Kentucky bluegrass when the soil was treated with mecoprop than when the soil was untreated.[38]

Effects on Mycorrhizal Fungi

Mecoprop can also damage mycorrhizal fungi, beneficial fungi that promote growth of many plant species and also help them resist stress. Researchers from the Swiss Federal Research Station for Fruit-Growing showed that mecoprop, applied at typical application rates, reduced from 80 percent to 35 percent the proportion of corn plants with viable mycorrhizal fungi.[39]

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IPM / Pesticide Web Sites (2/12)

What is IPM?
http://www.beyondpesticides.org/infoservices/pcos/IPM.HTM

Natural Lawn Care for Homeowners
http://www.spcpweb.org/factsheets/NaturalLawnCareforHomeowners.pdf

Lawn care from Safer Pest Control
http://www.spcpweb.org/factsheets/lawns.pdf

Corn Gluten Meal – A Natural Lawn Care Herbicide
http://www.pesticide.org/solutions/home-and-garden-toolbox/landscape-and-plant-solutions/corn-gluten-meal

Read Your Weeds
http://www.beyondpesticides.org/pesticidefreelawns/resources/Read%20Your%20Weeds-Organic%20Lawns.pdf
or What weeds tell you about lawn problems
http://www.spcpweb.org/factsheets/ReadYourWeeds.pdf

10 Reasons Not to Use Pesticides
http://www.pesticide.org/solutions/community/tenreasonstrifoldbrochure.pdf

Playing fields and children: pesticide concerns
http://www.beyondpesticides.org/infoservices/pesticidesandyou/Summer%202006/playing%20fields.pdf

Pesticides and playing fields II
http://www.beyondpesticides.org/lawn/factsheets/PesticideandPlayingFieldsltrhead.pdf

Do Pesticides Affect Learning and Behavior?
http://www.beyondpesticides.org/infoservices/pesticidesandyou/Spring%2004/Pesticides%20Learning%20Behavior.pdf

Asthma and Pesticides
http://www.beyondpesticides.org/infoservices/pesticidesandyou/Summer%2005/asthma%20article.pdf

Children and Lawn Chemicals Don't Mix
http://www.beyondpesticides.org/infoservices/pesticidesandyou/Summer%2005/children%20lawns.pdf

MCPP fact sheet (Mecoprop) [component of Trimec]
http://www.pesticide.org/get-the-facts/pesticide-factsheets/factsheets/mecoprop_mcpp

Dicamba fact sheet [component of Trimec]
http://www.pesticide.org/get-the-facts/pesticide-factsheets/factsheets/dicamba

Sumethrin factsheet [component of Anvil]
http://www.pesticide.org/get-the-facts/pesticide-factsheets/factsheets/sumithrin

Pesticide effects chart
http://www.beyondpesticides.org/gateway/health-enviro-print.pdf
See also Chart of pesticide risks
http://www.beyondpesticides.org/lawn/factsheets/30health.pdf

Effects of pesticides on male fertility
http://www.pesticide.org/get-the-facts/ncap-publications-and-reports/general-reports-and-publications/journal-of-pesticide-reform/journal-of-pesticide-reform-articles/masculinity.pdf

Pesticide Free Parks
http://www.pesticide.org/get-the-facts/ncap-publications-and-reports/pesticide-free-parks/pfptime.pdf

EPA websites about IPM

EPA website generally describing IPM
http://www.epa.gov/pesticides/factsheets/ipm.htm

Healthy Lawn, Healthy Environment
http://www.epa.gov/oppfead1/Publications/lawncare.pdf

Citizen's Guide to Pest Control Basic
http://www.epa.gov/OPPTpubs/Cit_Guide/citguide.pdf

Other Good IPM info

The Safer Choice (2nd version): Things you can do to make your home safer
http://www.beyondpesticides.org/saferchoice/saferchoice2.pdf

The Safer Choice: problems with pesticides
http://www.beyondpesticides.org/dow/brochure/dow%20brochure%20-%20low%20resolution.pdf

The Safer Choice: higher resolution
http://www.beyondpesticides.org/dow/brochure/dow%20brochure%20-%20high%20resolution.pdf

IPM Manual for Park Districts
http://www.spcpweb.org/attachments/pdmanual.pdf

Resource for organic lawn care
http://safelawns.org/

Pennsylvania: What is IPM?
http://paipm.cas.psu.edu/default.htm

IPM Practitioners Association home page
http://www.ipmaccess.com/

IPM manual from IPM Practitioners Association
http://www.ipmaccess.com/ipmintro.html

Ehret Park September 2009

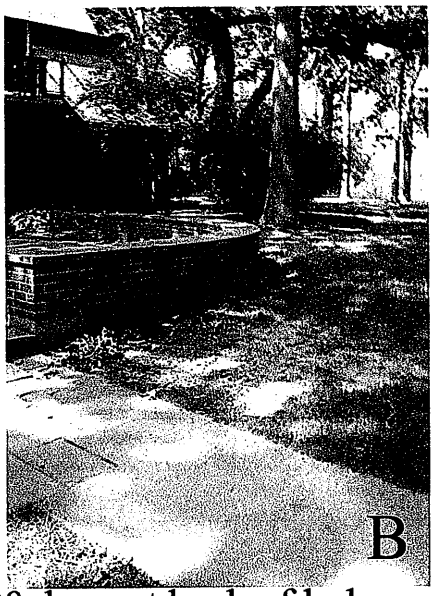
Some mulch by sign

Creeping Charlie - loves shade

Many bare spots

Ehret Park September 2011
Mulch is thinner, weeds encroaching
Weeds back by edge of gazebo, bare spots

Ehret Park February 2012
Hardly any mulch, many bare spots

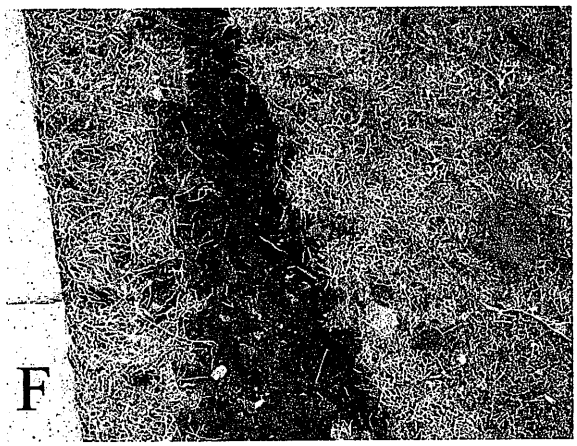


A: Sept 2009, bare at back of lodge

B: Sept 2011, bare at back of lodge

C: Feb 2012, bare at back of lodge

D, E, F: Feb 2012
Sidewalk leading to lodge



Do Pesticides Affect Learning and Behavior?

The neuro-endocrine-immune connection

By Warren Porter, Ph.D.

Children are our future and the people we have to protect. I have serious concerns about children exposed to low level pesticide mixtures from lawns and in the food, water, and air that passes through their bodies. Children do not have defensive enzymes at levels present in sexually mature adults. In this presentation, I will explore the neurological, endocrine, immune and developmental effects of such exposures.

Herbicides inaccurately touted as safe

In 1945, a National Geographic photographer took a picture of a child walking through DDT that was being sprayed from a truck at New York's Jones Beach State Park. The side of the truck said, "DDT. Powerful Insecticide. Harmless To Humans."

Since that time, herbicides like RoundUp (glyphosate) have been touted for their safety. Yet, they are capable of modifying the most fundamental biological processes. For example, many people report experiencing severe digestive problems related to overexposure to RoundUp. In fact, Finnish researchers showed that RoundUp's active ingredient, glyphostate, decreases the defenses of enzymes of the liver and intestines.[1] RoundUp, as a mixture of all its ingredients, has been shown to shut down a powerful antioxidant in the liver that detoxifies harmful compounds so they can be excreted through bile. A paper published in August 2000 shows that RoundUp alters gene expression and inhibits necessary steroid production by disrupting a particular protein expression. In 2002, a paper shows that RoundUp can also affect early cell division processes in embryos.

RoundUp can also affect early cell division processes in embryos.

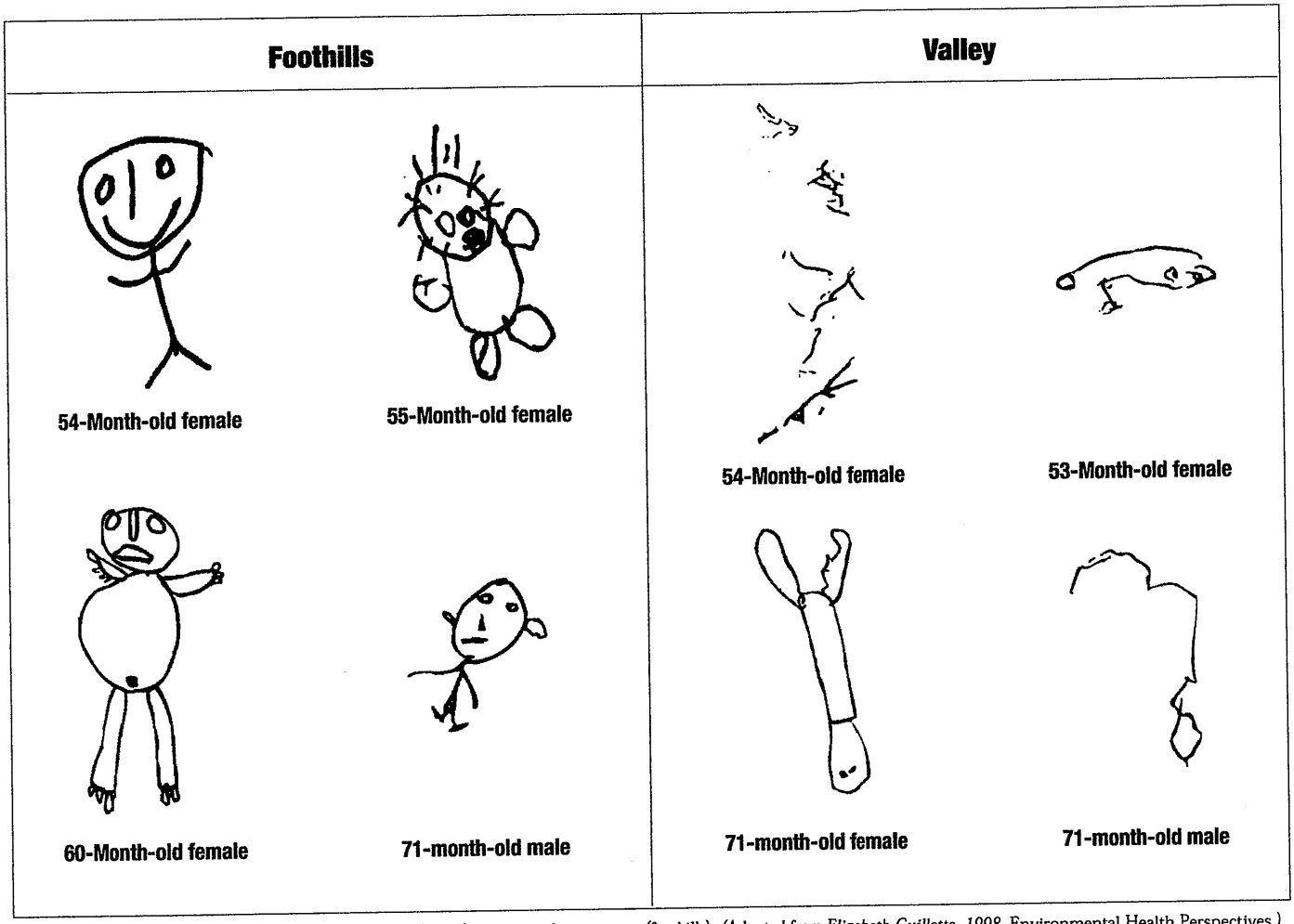
This article contains excerpts from a talk that Dr. Porter gave to the Nutrition for Optimal Health Association on February 4, 2004.

The increase in children with disabilities is alarming

I really got into the issue of children's pesticide exposure after reading an article in 1997 that looked at student disabilities in the Madison Metropolitan School District (WI), based on the U.S. Department of Education Federal Child Count Data from 1990-1995.[2] The data showed that the number of children in Madison that were emotionally disturbed increased 87%, children with learning disabilities increased 70%, and children with birth defects increased 83% in that five-year period. This is a serious epidemic and yet no one really knows exactly how or why this is happening. It's not unique; not to Madison, the state of Wisconsin, Chicago, New York, Philadelphia, Iran or Australia. It seems to be a global phenomenon and the question is why and how is this happening and what can we do about it.

Neurological processes and functions are tied to the hormone and immune systems and thus impact developmental processes.[3] When we think about learning we also have to think about how the immune system is working what the hormones in the body are doing, and how might all this be impacting the developmental processes. Organ system processes as well as the central nervous, endocrine, and immune systems talk to each other all the time by many different chemical mechanisms and support individual level functions of reproduction, growth and behaviors. Studies show that pesticides can function as nerve poisons and as pseudo hormones, modify hormone levels, and/or impact immune system function. Therefore, the hypothesis is that if one of these is impacted then because of the interconnection in the communications among them, it is likely that all other systems will be affected. Because organ system functions affect the intake of food, energy and mass, the fundamental foundation on which this whole super structure rests may be eroding in very subtle ways.

Perhaps the most telling experiment in effect is the work of Elizabeth Guillette, Ph.D. in her study on the children in the



Representative drawings of children exposed to pesticides (valley) and those that were not (foothills). (Adapted from Elizabeth Guillette, 1998, Environmental Health Perspectives.)

Yaqui Valley in Sonora, Mexico. Dr. Guillette compared preschool-aged children living in the foothills where pesticides use was avoided with children living in the valley where agricultural pesticides were frequently used. Although Dr. Guillette and her colleagues found no differences in growth patterns, the exposed children demonstrated decreases in stamina, gross and fine eye-hand coordination, 30-minute memory and in the ability to draw a person. It is those drawings that are the most telling of all and show the most striking differences between the exposed and unexposed children. The children from the foothills drew figures of humans with features that are characteristic of four and five year olds, whereas the children from the valley lacked the ability to draw humans with any such detail.[4]

EPA lacks sufficient data on safety

Surfactants, organic soaps and "re-worked" chemicals in herbicide mixtures together with active ingredients create the cocktails that are sold but unregulated. EPA registration is based on tests of the pure agent chemicals. Yet, it is the mixes with all the surfactants and all the other ingredients present in them that are sold. These are very different products from what is registered. When a pesticide is registered, the following six items are *not* included in the toxicology data submitted to EPA.

Dosing deficient. Pulse doses at low concentrations are not considered.

Routes restricted. Single exposure routes are used in registering a pesticide. However, oral, cutaneous and respiratory routes are very significant ways for these chemicals to get right at the brain.

Endpoints excessive. Cancer and mutations are used. Yet, even though the *Food Quality Protection Act* mandates testing for immune, endocrine and nervous system and developmental function defects from pesticide exposure, it has not been enforced.

Additives absent. Manufacturing contaminants, toxic waste contaminants deliberately added ("reworking") and inert ingredients are missing from the laboratory testing that is done for a pesticides' registration.

Mixtures missing. There is little or no testing for commonly occurring mixtures.

Stresses squelched. Nutrition, disease, and climate stress are not considered.

Weeding Out Hazardous Pesticides

As spring approaches and pesky weeds begin appearing on lawns and landscapes, be sure to implement a prevention-oriented weed management program. *For more information, contact Beyond Pesticides or see www.beyondpesticides.org.*

Prevention

The first step is to prevent weed infestations by maintaining a healthy lawn.

- **Develop healthy soil.** Using a soil probe, cut or dig a small hole about 10" deep and with one side that is straight and smooth. The lawn should have between 5"-6" of topsoil, which is the darkest soil layer. If needed, add topdressings of organic matter.
- **Plant well-adapted, pest-resistant grass varieties.** Find out which grass is most suitable to your climate from your local cooperative extension. A mix of two or more grass varieties is preferable. Over seeding can also reduce weed problems in some cases.
- **Aerate the lawn regularly.** Aerating loosens the soil, allowing air, water, and nutrients to reach the grass roots. Most lawns should be aerated twice a year.
- **De-thatch.** Thatch is a dense layer of grass stems and roots on the surface of the soil. When it becomes thick, roots will grow within the layer of thatch instead of establishing themselves deeply in the soil, which can lead to insect and disease problems, and increase susceptibility to cold, heat and drought. Thatch is reduced by aeration, topdressing with organic matter, or by vertical mowing.
- **Maintain proper pH.** Test the soil and adjust the pH if necessary. Low pH means high acid content – add lime to lower the acidity to 6.7-7 for most grass varieties. High pH means high alkaline – add sulfur to lower the pH, taking care not to add too much and burn the lawn.
- **Fertilize** the lawn at least once a year, preferably in the fall, using a slow-release, urea based product. Fertilizer should not be water-soluble.
- **Water properly.** Too much or too little water can induce pest outbreaks. Enough water should be used each time to wet the soil to the depth of the grass root zone. Soil should be allowed to become nearly dry between watering. Avoid frequent, shallow watering, which promote shallow root systems and reduce the ability of the lawn to resist stress.
- **Mow** correctly and frequently to ensure that weeds are unable to build energy reserves and become well established. Use sharp blades set as high as possible to minimize adverse effects. Never cut off more than 30-40% of the grass blades in a single mowing. Rotate mowing patterns to reduce lawn compaction. Leave a light layer of grass clippings on the grass, as they can provide up to half the lawn's nitrogen requirement.

Least-toxic control strategies

When weeds appear, you don't have to resort to toxic chemicals to get rid of them.

- If you feel that an herbicide is necessary, **corn gluten meal** is an excellent pre-emergent. Because of its high nitrogen content, it can be applied to turf grass as a fertilizer and top dressing, and it suppresses growth of annual weeds such as crabgrass.
- **Fatty acid soaps**, which rapidly biodegrade in soil, provide a least-toxic post-emergent weed control option. Over use of soaps, like chemical pesticides, can lead to pest resistance. Carefully read the label of fatty-acid soap pesticide products to identify the active ingredient and make sure that they do not also contain toxic pesticides or synergists. A fatty-acid soap product called Sharpshooter™ is an effective broad-spectrum herbicide.
- **Vinegar** in at least a 20% solution can be used to spot treat weeds.

Beware of genetically engineered (GE) turfgrass seed varieties, such as RoundUp Ready bentgrass that is currently being developed by Scotts and Monsanto. Many agree that GE turfgrass will lead to an increase in the use of toxic pesticides.

Pulse doses - small exposures, big problems

Enzymes in the liver detoxify the human body of fat-soluble molecules that are most dangerous. It takes anywhere between a half a day to five days to defend against a chemical exposure, which in many cases is not quick enough in protecting the body from defending itself. The trouble is, these liver enzymes, which we do not want too high or too low, not only help detoxify the body, but they also carefully regulate the level of reproductive hormones in the human body. There is now some evidence that is beginning to accumulate that suggests that very short-term pulses concerning key hormones related to thyroid hormones may in fact be behind a large number of pesticide poisoning symptoms.

For example, a pregnant woman standing by a window at springtime inhales pesticides or it lands on her skin, it will get in her blood. Because pesticides contain surfactants and organic soaps that allow them access to the brain, she will get a sudden pulse of a thyroid hormone response either up or down and that thyroid hormone crosses the placenta. All of a sudden the thyroid hormone level changes and the fetus' brain changes the way it is forming. A baby's brain forms in a two-day window. According to animal studies, if the mother's thyroid is either too high or too low when the brain is forming, it will cause the spinal cord to form inappropriately. A year or so later the child is having trouble learning. Yet, there is no trace of a pesticide.

Pesticides get into the human body and make their way to the brain easily because of the way they are formulated to get into plants and insects.

Herbicides and birth defects

The owner of a lawn company once said that the diluted pesticide sprays they use on yards is perfectly safe. Yet, Vincent Garry, M.D., one of the top epidemiologist in the country at the University of Minnesota Laboratory of Environmental Medicine and Pathology, did a long-term study, a retrospective study, which was based on the assumption that if pesticides are safe and applied according to label instructions, then we should be able to look at the children of the pesticide applicators and compare them to the children of general population and there should be no difference.

Dr. Garry's study looked at 210,723 live births in Minnesota from 1989 to 1992, a very large sample size, and found three things:

1) Pesticide applicators' children had significantly higher birth defect rates;

2) Birth defect rates were significantly higher in the western agriculture region of the state; and,

3) A significant majority of children with birth defects were born nine months after spring, suggesting that whatever was causing the birth defects was happening at a very early stage in fetal development.[5]

Poisoning similarities of plants, insects and humans

Pesticides get into the human body and make their way to the brain easily because of the way they are formulated to get into plants and insects. Two routes of entry exist. One way is through the waxy skin, the cuticle of the plant or insect. Lipids and organic soaps, surfactants, dissolve wax and are therefore added to pesticides in order to get rapid penetration through the waxy surface of the insect or plant. Unfortunately, human skin is also a waxy surface and pesticides have the same affect on humans.

The other primary route of entry is through plants and insects' breathing pores, which have a hemispheric film of water that acts as a physical barrier. But surfactants are designed to weaken that watery film and make for rapid penetration. Unfortunately, there are tiny cavities on the surface of human lungs, which are also lined by a thin film of water with surface tension that acts as a barrier. Therefore, pesticides act in a similar way in getting into human lungs quickly.

Both of these routes of entry, absorption and inhalation, allow for immediate access to the blood stream. These fat-soluble substances cross the blood brain barrier, because the barrier does not protect against anything that is fat-soluble. So in effect, you are giving these very reactive chemicals access to the command and control center of the body.

Herbicide mixtures and the thyroid connection

The thyroid hormone that controls brain, sexual development, irritability, steroid hormone and immune interactions, is consistently modulated in adult and fetal exposures to all the herbicide mixtures we have tested.

Tests of carbamate insecticides and triazine herbicides mixtures show a: (i) reduction in spatial discrimination, (ii) decrease in speed of learning, (iii) reduction in exploratory behavior, (iv) change in aggression intensity and frequency, (v) change and reduction in memory and motor coordination in the brain, (vi) change in food absorption, (vii) change in thyroid hormone, (viii) change in growth hormone, (ix) reduction in antibodies formation capability, (x) reduction in the host defense mechanisms of the white blood cells in the immune system, (xi) reduction in the ability to gobble up foreign microorganisms and (xii) change in DNA synthesis of genetic materials and RNA synthesis in a cell culture.[6]

Low level exposure to herbicides

The mixture studies have consistently shown neurological, endocrine and immune effects at low doses, most of which were environmentally relevant. Some colleagues and I developed a study looking at an herbicide mixture of 2,4-D, mecoprop, dicamba and its effect on fetal exposures, starting with a concentration that EPA said would have an effect, diluted down to a level to be considered "safe," to then even lower concentrations. We specifically wanted to see what the effect was in the ability to bring young successfully to birth and wean; and how an herbicide induced abortion of fetuses. The results, published in November 2002, showed that this common lawn pesticide mixture is capable of inducing abortions and resorptions of fetuses at very low parts per billion concentrations. The greatest effect was at the lowest dose.[7]

...this common lawn pesticide mixture is capable of inducing abortions and resorptions of fetuses at very low parts per billion concentrations.

It is important to point out that these hormonal results are not unique. It is seen in the inverse dose response of the immune system that we published in 1987, where we looked at aldicarb.[8] And in 2000, a study found that chlorpyrifos' greatest impact was at the intermediate doses or really the lowest dose and that the female rats are much more affected, whereas the males tend to be relatively unaffected, thus showing a differential sexual dependent response in terms of learning abilities.[9]

Seasonal effects on immune function

There are seasonal effects on the immune system function due to herbicide exposure as well, which are also not considered in EPA's testing requirements for pesticide registration. For instance, we have found that herbicide exposure in the spring has an increased effect on males, exposure in the fall has an increased effect on males and females, and in the winter there is no effect at all. Not only season, but season plus sex is involved in terms of immune function. For example, we found that immune function changes occurred in males in the spring, and females were significantly different in the fall. In looking at blood level thyroid hormone levels, we found significant differences in the males in the fall and in the winter.

Dr. Porter received his Ph.D. in physiological ecology from the University of California, Los Angeles and has been a professor of zoology and environmental toxicology at the University of Wisconsin, Madison since 1986. Dr. Porter and his colleagues have found that even minute levels of pesticides can harm the immune, reproductive, endocrine and nervous systems of animals. For more information about Dr. Porter's work, see www.wisc.edu/zoology or contact him at Department of Zoology, University of Wisconsin, 250 N. Mills Street, Madison WI 53706, 608-262-1719 or wporter@mhub.zoology.wisc.edu.

Endnotes

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9 Levin, E., et al. 2002. "Prenatal chlorpyrifos exposure in rats causes persistent behavioral alterations." *Neurotoxicology and Teratology* (24)6: 733-741.

MEMORANDUM

TO: CHAIRMAN LAPLACA AND THE EPS COMMITTEE

FROM: GEORGE FRANCO, DIRECTOR OF PUBLIC SERVICES

SUBJECT: EMERALD ASH BORER – TREATMENT OPTIONS

DATE: FEBRUARY 7, 2012

Staff has been reviewing the state of the Village's ash tree population with the goal of proposing a viable option to treat a small percentage of these trees as a pilot program with a goal of slowing the rate of decline in some trees in order to forestall the need for tree removal. However, with treatment costs and ash tree species populations within the Village, long term treatment of the entire ash population is not a viable monetary option, nor does the Village arboricultural staff believe it is a good long term solution to providing a healthy and viable Village forest. The Village will continue to provide guaranteed treatment options and prices available to residents for their ash trees that are accessible on the Village web-page.

There were several factors weighed in determining if a tree is viable for this pilot project:

1. Population density: The percentage of ash trees on a given block. Staff was hoping to treat areas where, due to the amount of ash trees and lack of other species, the loss of ash trees would cause a significant downward alteration in the streetscape. Unfortunately, many of these areas have already been heavily infested and do not have remaining trees in a viable condition for treatment.

2. Tree Condition: Many ash trees are in poor health or are structurally weak and are not considered viable candidates for treatment. With the Village's grant sponsored tree inventory recently completed. Staff is suggesting treating trees in excellent condition, where treatment will be most effective.

3. Surrounding Landscape: Many residents have trees on their private property that are close to the parkway and therefore diminish the impact of parkway trees lost to emerald ash borer. Parkways with minimal surrounding landscape will have a more significant downward alteration in the streetscape if the parkway trees are lost and will be considered for the proposed pilot program.

The vast majority of public ash, well over 90%, trees will not be treated by this pilot program. There are only a few brief years left in this species' viability, and due to our recent discoveries within the Village, we are losing fair numbers of them already. Residents beginning to prepare now both emotionally and monetarily for the loss of these specimens would make good sense.

The following is a prioritized list of trees to be considered for this pilot project:

LOCATION	TOTAL INCHES	$/INCH	COST
105 Trees rated excellent located throughout the Village	1,081	$2.50	$2,702.50
Garfield Street from 55th to 59th (36 of 47 ash trees)	1,260	$2.50	$3,150.00
Woodside Ave from Princeton to Columbia (6 of 11 ash trees)	120	$2.50	$ 300.00
Garfield Street from Chicago to 1st (5 of 10 ash trees)	75	$2.50	$187.50
TOTAL COST			$6,340.00

This total cost uses the chemical product "Xytect" in a soil injection at the base of the tree. There would me minimal exposure due to the fact that the product would be injected below grade. Xytect has been found to be effective in reducing EAB populations in infested trees in several recent scientific studies. An option also considered was the trunk injection of the trees south of 55th Street. These are large diameter trees. In some studies, trunk injection of larger trees has shown increased efficacy. This method is more expensive ($10.00 per inch), but is labeled as two year control. The cost of trunk injecting these trees is estimated at $12,600 and would increase the cost of the pilot project to $15,790.00. If trees identified in this program are treated by soil injection, all treatments could be completed by May 1, 2012, weather dependent. If trunk injection is also used, those treatments would need to occur in the next fiscal year.

Staff welcomes additional input, comments, and or questions from Committee regarding this pilot program. Due to the need to secure pricing and develop a work plan, staff is respectfully requesting direction from Committee regarding this item.

MEMORANDUM

TO: CHAIRMAN LA PLACA AND THE EPS COMMITTEE

FROM: GEORGE FRANCO

SUBJECT: DECORATIVE STREET LAMP OPTIONS FOR LED CONVERSION

Date: 2/7/2012

LED lighting provides a "whiter" light, improved night vision with minimized glare, consumes approximately 50% less energy than current lighting fixtures, and requires less maintenance when installed than the high pressure sodium bulbs and ballasts currently in use. Currently, the Village has approximately 230 decorative light poles and lamps which are not converted to LED lighting. The cost of the decorative pole is $1,050 each, while the cost of a complete LED lamp ranges from approximately $1,300.00 to $1,600.00 each. Staff has been replacing poles throughout town as needed, however with the current condition of these poles and the opportunity to improve lighting and reduce costs staff is seeking to begin a replacement program for these poles and lamps beginning in the Central Business District.

Due to budgetary constraints, staff would like to inventory all light poles in the Central Business District for overall condition before committing to an action plan. Once this inventory is completed, staff would like to report back to Committee with the findings and brainstorm a budget sustainable replacement program. Below are some possible lighting replacement options which can be achieved:

1. Complete replacement of decorative pole and lamp fixture if both components are considered in "fair" to "poor" condition.

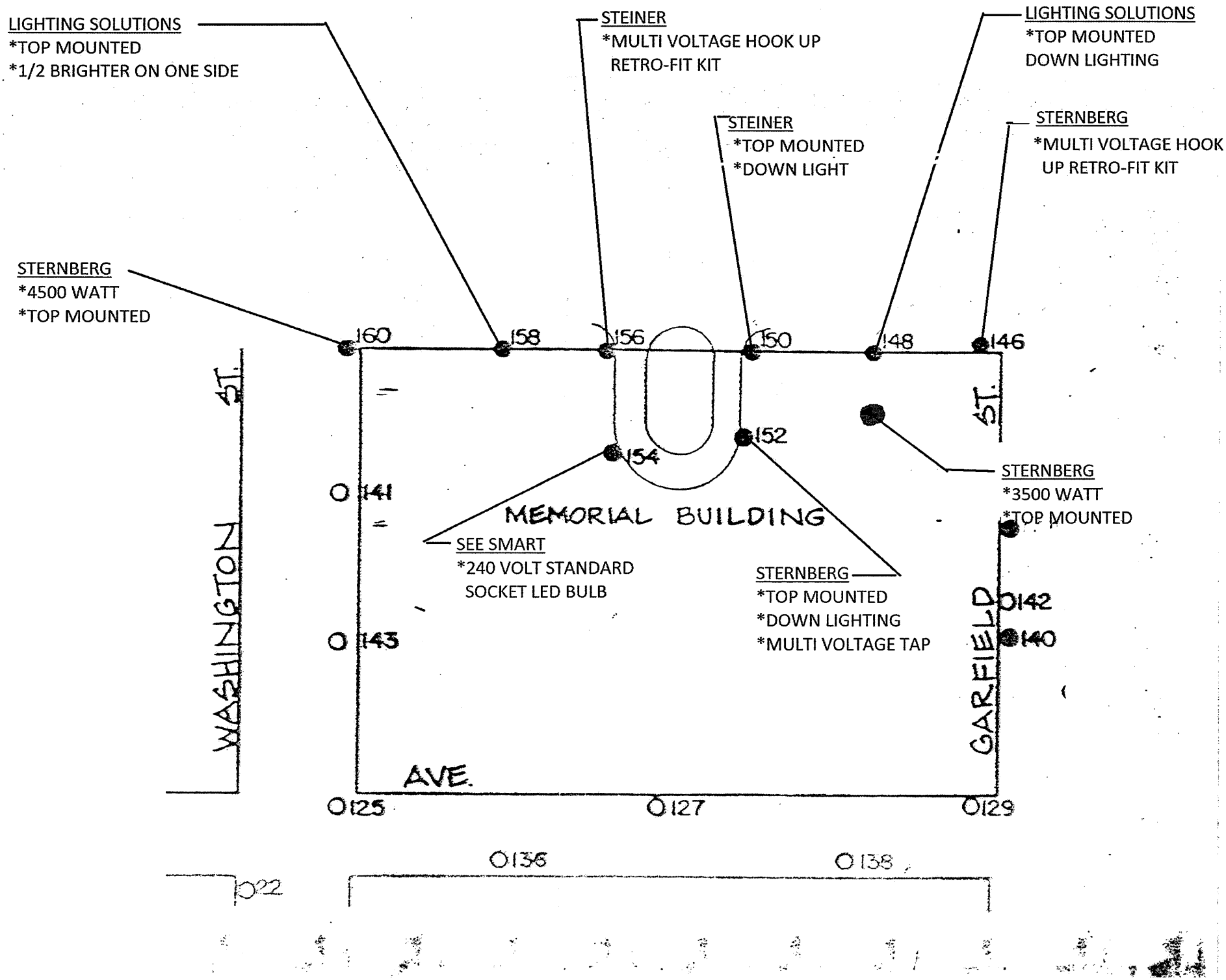
2. Replacement of lamp fixture in the event the pole is considered in "good" condition and the lamp is in "fair" to "poor" condition.

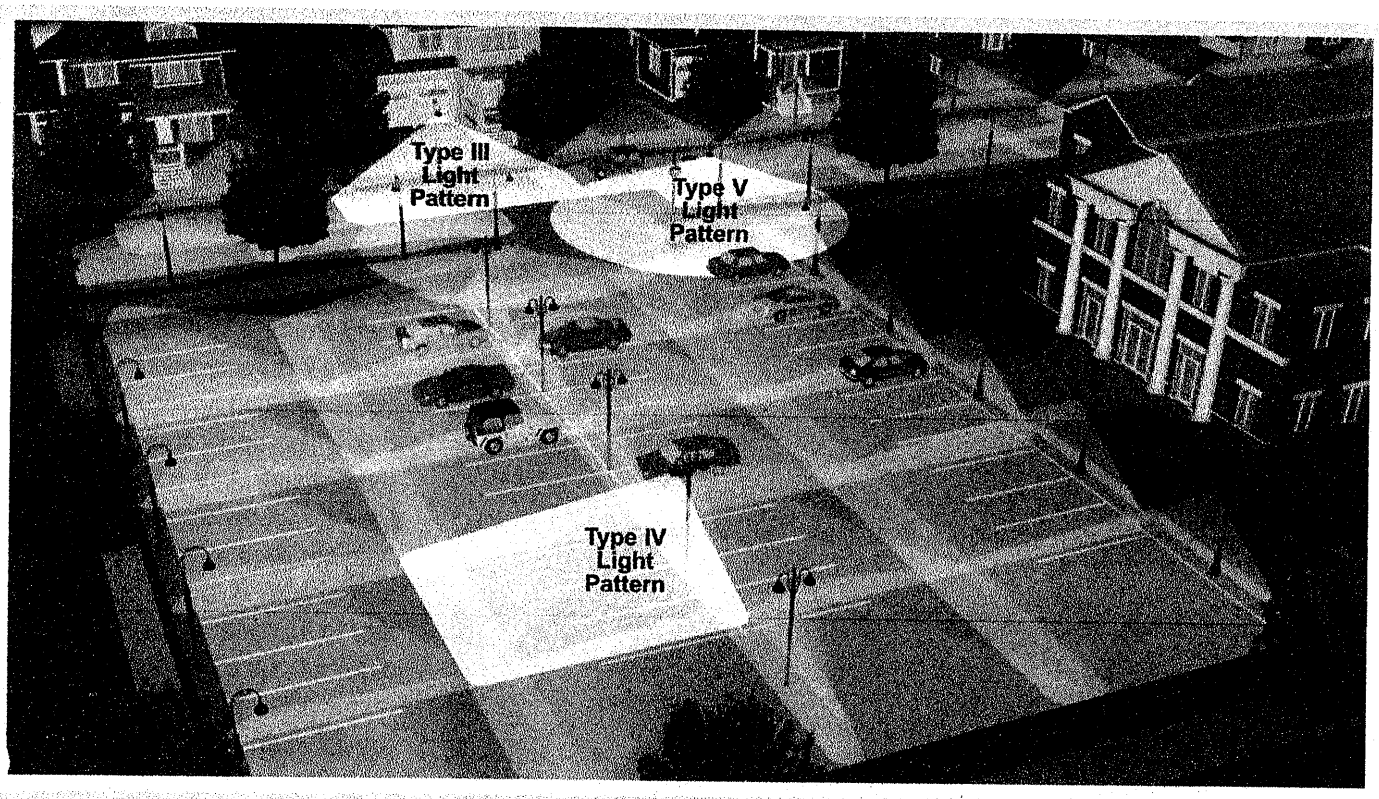
3. Placement of an LED lamp retro-fit kit if the pole and head are considered in "good" condition.

4. Utilization of a dimming option on the LED lamps for increased energy savings

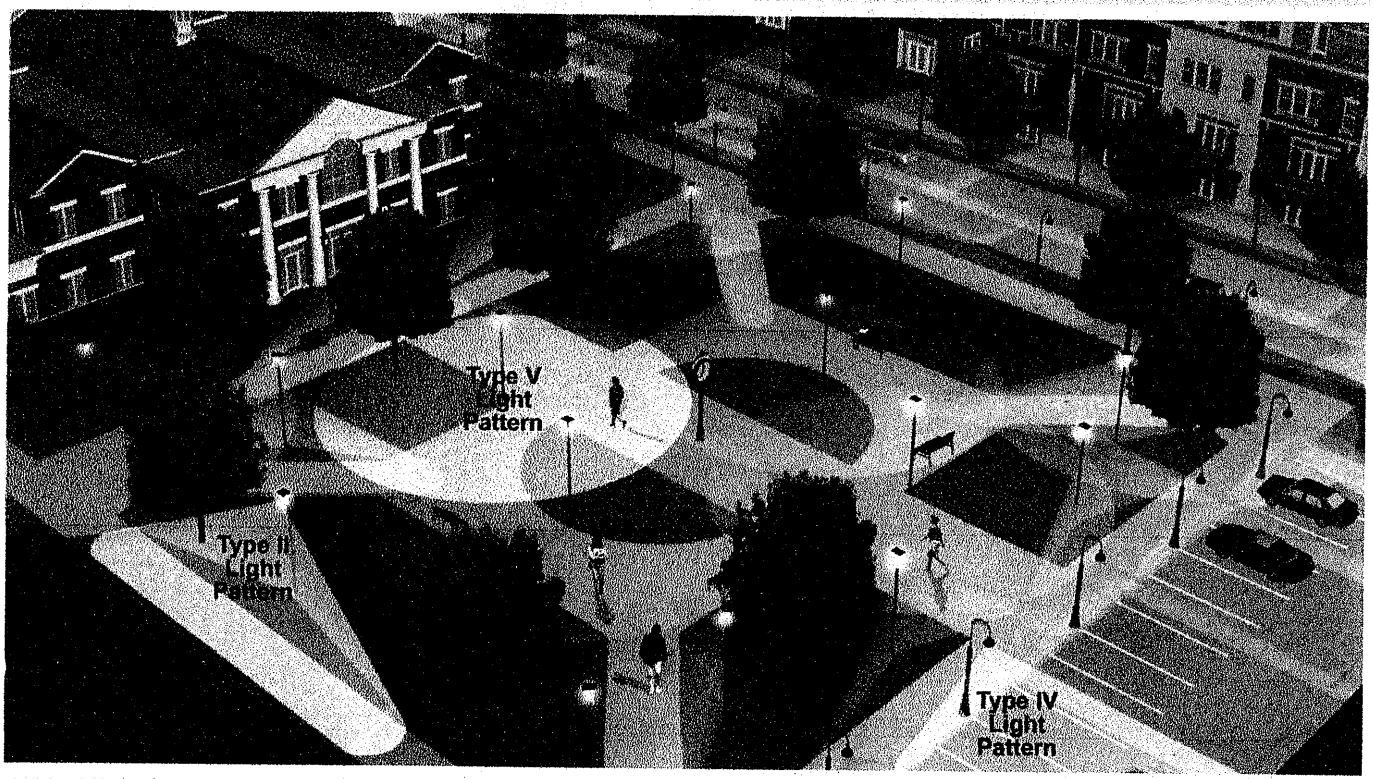
The City of Warrenville has started their decorative street lamp replacement program on a small scale. They began by replacing 38 lamp fixtures in a small subdivision where they were able to meter the electrical savings. After the change to LED lighting, there was a 60% reduction in electric bills for the replaced lamps.

The Village of Lombard has also started their decorative street lamp replacement program by replacing approximately 50 lamp fixtures. Current cost savings are not available at this time, however there has been positive feedback from residents and business owners.


LIGHTING SOLUTIONS
*TOP MOUNTED
*1/2 BRIGHTER ON ONE SIDE
STEINER
*MULTI VOLTAGE HOOK UP
RETRO-FIT KIT
STEINER
*TOP MOUNTED
*DOWN LIGHT
LIGHTING SOLUTIONS
*TOP MOUNTED
DOWN LIGHTING
STERNBERG
*MULTI VOLTAGE HOOK
UP RETRO-FIT KIT
STERNBERG
*4500 WATT
*TOP MOUNTED
160
158
156
150
148
146
ST.
152
154
STERNBERG
*3500 WATT
*TOP MOUNTED
141
MEMORIAL BUILDING
SEE SMART
*240 VOLT STANDARD
SOCKET LED BULB
STERNBERG
*TOP MOUNTED
*DOWN LIGHTING
*MULTI VOLTAGE TAP
WASHINGTON ST.
GARFIELD
142
143
140
AVE.
125
127
129
136
138
122



Example of a Parking Lot utilizing Type IV light distribution for uniform coverage.



Example of Campus Lighting using Type II, Type IV and Type V light distribution.

MEMORANDUM

TO: CHAIRMAN LA PLACA AND THE EPS COMMITTEE

FROM: GEORGE FRANCO

SUBJECT: MOSQUITO ABATEMENT SERVICES

Date: 2/8/2012

Public Services staff met with Tom Kessler, the Village's control consultant representative from Clarke Mosquito Control, to review the 2011 annual report. During this conversation, Mr. Kessler mentioned that because the current contract is set to expire on April 30, 2012, Clarke Mosquito Control would be willing to lock in the current year's pricing for a three year term if the Village decides not to go out to bid. Per this proposal, the cost for mosquito abatement program services for the next 3 years would be $55,496.00. The Pricing for this service per bid #1457 in 2009 is as follows:

FY 2009-10 $52,250.00

FY 2010-11 $53,820.00

FY 2011-12 $55,496.00

The core program cost does not include the service of a village wide spraying as authorized by the Village which is an additional $5,517.00 per application. Previous requests for Board Action for mosquito abatement services are attached and have been as follows:

2009--One bid received by Clarke Mosquito Company; 3 year contract.

2006--One bid received by Clarke Mosquito Control; 3 year contract.

2005--Solicited proposal from Clarke Environmental; waived competitive bidding

2004--Negotiated contract with Clarke Mosquito Control

2003--Negotiated contract with Clarke Mosquito Control

2002--Solicited proposal from Clarke Environmental; waived competitive bidding

2000--One bid received by Clarke Environmental.

Public Services staff respectfully requests discussion from Committee to move forward with the formal bidding process or to accept the proposal from Clarke Mosquito Control and waive competitive bidding.

DATE February 8, 2012

AGENDA EPS Agenda **SECTION NUMBER**	**ORIGINATING** **DEPARTMENT** PUBLIC SERVICES
ITEM MOSQUITO ABATEMENT	**APPROVAL**

The Public Services department received one bid for the service of mosquito abatement services. The bid was received from Clarke Mosquito Control, who has been providing this service to the Village of Hinsdale for over 30 years. This is a three- year contract for which there is $55,000.00 budgeted for FY 2009-10. The bid result is as follows:

YEAR ONE	MAY 1, 2009-2010	$52,250.00
YEAR TWO	MAY 1, 2010-2011	$53,820.00
YEAR THREE	MAY 1, 2011-2012	$55,496.00
	TOTAL	$161,566.00

Public Services staff would like to recommend that the bid #1457 for the service of mosquito abatement services be awarded to Clarke Mosquito Control in the bid amount for FY 2009-10 of $52,250.00, and if the Committee concurs, the following motion would be appropriate:

MOTION: To recommend to the Board of Trustee's to approve bid #1457 for the service of mosquito abatement services to Clarke Mosquito Control.

STAFF APPROVALS

APPROVAL	**APPROVAL**	**APPROVAL**	**APPROVAL**	~~**MANAGERS**~~ **APPROVAL**

COMMITTEE ACTION:

BOARD ACTION:

DATE March 13, 2006

REQUEST FOR BOARD ACTION

AGENDA Consent Agenda **SECTION NUMBER**	**ORIGINATING** **DEPARTMENT** PUBLIC SERVICES
ITEM AWARD – MOSQUITO ABATEMENT	**APPROVAL**

On March 13, one bid was received for Hinsdale's mosquito abatement program for which there is $55,000 budgeted in FY06-07. A three-year contract was bid. Clarke Mosquito Control has done a superb job. The base program for 2006 is estimated to be $54,873.88 with increased catch basin coverage. If adulticiding is necessary, it will be extra. A bid summary is attached.

MOTION: To award Bid 1389, Mosquito Abatement to Clarke Mosquito Control in the amount of $ 54,873.88.

STAFF APPROVALS

APPROVAL	**APPROVAL**	**APPROVAL**	**APPROVAL**	**MANAGER'S APPROVAL**

COMMITTEE ACTION:

On March 13, 2006 the Environment and Public Services Committee recommended approval of the above motion.

BOARD ACTION:

DATE February 15, 2005

REQUEST FOR BOARD ACTION

AGENDA Consent Agenda **SECTION NUMBER**	**ORIGINATING** **DEPARTMENT** PUBLIC SERVICES
MOTION FORM **ITEM MOSQUITO ABATEMENT**	**APPROVAL**

For many years there has been only one firm licensed and capable of handling Hinsdale's mosquito abatement program. Clarke Mosquito Control has done a superb job. The base program for 2005 is estimated to be $ 49,631.16 with increased catch basin coverage. If adulticiding is necessary, it will be extra. Staff recommends waiving competitive bidding and awarding a contract now so detection and treatment will be ready when the weather breaks.

MOTION: To Waive competitive bidding and to Award 2005 Mosquito Abatement to Clarke Mosquito Control in the amount of $49,631.16.

STAFF APPROVALS

APPROVAL	**APPROVAL**	**APPROVAL**	**APPROVAL**	**MANAGER'S APPROVAL**

COMMITTEE ACTION:

On February 14, 2005 the Environment and Public Services Committee recommended approval of the above motion.

BOARD ACTION:

DATE March 11, 2004

REQUEST FOR BOARD ACTION

AGENDA Consent Agenda **SECTION NUMBER**	**ORIGINATING** **DEPARTMENT** PUBLIC SERVICES
ITEM **Purchase Requisition** **Mosquito Abatement**	**APPROVAL**

For several years the only bidder for mosquito abatement services has been Clarke Mosquito Control, one of the country's premier firms in this field. Rather than bid again, staff negotiated a contract with Clarke, which keeps the higher intensity monitoring and larvaciding started last year. An adjustment for additional basins has been made. A unit price for adulticiding is established. There is $42,000 budgeted next fiscal year for this work. Staff recommends approval of the $43,170.06 package.

MOTION: To Approve a Purchase Requisition for Mosquito Abatement Services with Clarke Mosquito Control in the amount of $43,170.06

STAFF APPROVALS

DHS APPROVAL	**APPROVAL**	**APPROVAL**	**APPROVAL**	**MANAGER'S APPROVAL**

COMMITTEE ACTION:

On March 8, 2004, the Environment and Public Services Committee recommended approval of the above motion.

BOARD ACTION:

DATE March 6, 2003

REQUEST FOR BOARD ACTION

AGENDA Consent Agenda **SECTION NUMBER**	**ORIGINATING** **DEPARTMENT** PUBLIC SERVICES
ITEM **Purchase Requisition** **MOSQUITO ABATEMENT**	**APPROVAL**

For several years the only bidder for mosquito abatement services has been Clarke Mosquito Control, one of the country's premier firms in this field. Rather than bid again, staff negotiated a contract with Clarke, which includes additional monitoring and larvaciding. A unit price for adulticiding is established. There is $40,000 budgeted next fiscal year for this work. Staff recommends Option A for $40,101.96. The multiyear option is not recommended as control in light of West Nile is evolving.

MOTION: To Approve a Purchase Requisition for Mosquito Abatement Services with Clarke Mosquito Control in the amount of $40,101.96.

STAFF APPROVALS

APPROVAL	**APPROVAL**	**APPROVAL**	**APPROVAL**	**MANAGER'S APPROVAL**

COMMITTEE ACTION:

BOARD ACTION:

DATE February 8, 2012

REQUEST FOR BOARD ACTION

AGENDA Consent Agenda **SECTION NUMBER**	**ORIGINATING** **DEPARTMENT** PUBLIC SERVICES
ITEM Waive Competitive Bidding Mosquito Abatement	**APPROVAL**

Staff solicited a proposal for mosquito abatement from the only firm that has bid on this activity in a decade – Clarke Environmental, whose efforts are recognized nationally. The proposal includes items such as adulticiding, which may or may not be used. There is $ 21,500.00 budgeted for this work. Staff recommends Option A, which reflects the extra catch basin treatment in case of West Nile Virus outbreak. Although prices can be established for three years, Staff recommends a one-year contract in case there is a change in prevention practice.

MOTION: To Waive Competitive bidding and to award Mosquito Abatement to Clarke Environmental Mosquito Management Inc. in the amount of $ 24,990.44.

STAFF APPROVALS

APPROVAL	**APPROVAL**	**APPROVAL**	**APPROVAL**	**MANAGER'S APPROVAL**

COMMITTEE ACTION:

At the April 8, 2002 meeting, the Environment and Public Services Committee recommended approval of the above motion.

BOARD ACTION:

DATE April 7, 2000

REQUEST FOR BOARD ACTION

AGENDA Consent Agenda **SECTION NUMBER**	**ORIGINATING** **DEPARTMENT** PUBLIC SERVICES
ITEM **Mosquito Abatement**	**APPROVAL**

On April 4, the Village received one bid for Mosquito Abatement from its current contractor, Clarke Environmental, who has done excellent work for years. Their bid exceeds the budget of $15,500.00 because unit prices are established for activities which may not need to be done. The program features larvaciding with bacteria specifically affecting mosquitoes.
Attached is a bid summary.

MOTION: **To award Contract 00-15 Mosquito Abatement to Clarke Environmental Mosquito Management Inc. in the bid comparison quantity of $ 17,109.48**

STAFF APPROVALS

DHS APPROVAL	APPROVAL	APPROVAL	APPROVAL	MANAGER'S APPROVAL

COMMITTEE ACTION:

At its meeting of April 10, 2000 the Environment and Public Services Committee recommended approval of the above motion.

BOARD ACTION:

MEMORANDUM

TO: Chairman LaPlaca and Dave Cook

FROM: Dan Deeter

DATE: February 13, 2012

RE: Engineering Monthly Report

The Engineering Division has continued to work with the Building Division in order to complete site inspections, as well as responding to drainage complaint calls. In total, three Engineering employees performed 93 site inspections for the month of January. The following capital improvement projects and engineering studies are underway.

Veeck Park Wet Weather Facility

Work by Twin Oaks Landscaping has halted during the winter months. Additional bio-solids placement, final landscaping, and sod placement will be conducted in Spring 2012. The Parks Department will monitor the grass growth through 2012 to open the fields for play as soon as possible.

Oak Street Bridge Replacement Engineering Phase 1/Environmental Assessment

January 2012 Activities

- Clark Dietz, Inc. (CDI) performed advance work for extra traffic counting work.
- CDI coordinated soil boring program with geotechnical engineer (Wang), structural engineer (HR Green), and BNSF.
- CDI prepared summary of project work completed and estimated cost-to-complete.
- CDI developed estimate of extra work effort to perform additional traffic counts, prepare traffic calming tool kit, and perform supplemental topographic survey.

February 2012 Activities

- CDI performs additional traffic count.
- CDI submits cost-to-complete summary to Village of Hinsdale.
- CDI submits soil boring plan for review and approval by Village of Hinsdale.

Chestnut Street Sewer Separation Project

January 2012 Activities

- CDI completed reviewed change order requests and the Phase 1 line item quantities (constructed versus bid). With 40% of the project completed, CDI estimates that the project is $21,000 under budget (see attached).
- Phase 1 surface paving and final restoration will be completed during the 2012 construction season.

February 2012 Activities

- CDI will confirm quantities for phase 1 with Martam Construction.
- Construction for the final phases will begin Spring 2012 as the weather permits

Other Engineering Activities

Woodlands Green Infrastructure Improvements

- HR Green will review the 60% phase 1 plans with Phase 1 residents on 02/16/12.
- IEPA reviewing permit — January 2012
- Woodlands SSA has been established.
- Bidding/Award of Construction Contract — May 2012
- Construction Starts — June 2012

2012 Resurfacing

- Develop 90% design and bidding documents — January 2012
- Plans sent to IEPA for permitting — February 2012
- Bidding — March 2012
- Award Construction Contract — April 2012
- Construction Starts — May 2012

2012 Reconstruction (N. Washington/N. Grant Street)

- Final bid documents — January 2012
- IEPA permitted plans — February 2012
- Bidding — February/March 2012
- Award Construction Contract/Notice to Proceed — March 2012
- Construction Starts — April 2012

2013 Resurfacing and 2013 Reconstruction (W. Fourth Street Improvements)

- Staff is preparing an RFP for engineering services — February 2012
- Consultants develop proposals — March 2012
- Proposal opening and award of design engineering — March/April 2012
- Design Engineering & Permitting — April – December 2012
- Bidding — January 2013
- Bid and Construction Observation Services Awarded — February 2013
- Construction Starts — April 2013 (weather permitting)

State and Federal Funding Opportunities

A summary of the Grant Funds Awarded to or Applied for by the Village of Hinsdale is attached.

Cc: President and Board of Trustees
Dave Cook

Veeck Park Wet Weather Facility
Hinsdale, Illinois

Date	Bar Screen Channel Down Stream (feet)	Overflow Height Above Weir (feet)	Storage Tank Elevation (feet)	Precipitation (inches)
01/01/12	0.00		2.31	
01/02/12	0.00		2.64	
01/03/12	0.00		3.11	
01/04/12	0.00		3.33	
01/05/12	0.00		2.49	
01/06/12	0.01		2.71	
01/07/12	0.00		2.82	
01/08/12	0.00		3.03	snow
01/09/12	0.00		2.74	
01/10/12	0.00		3.03	
01/11/12	0.04		3.31	
01/12/12	0.00		3.55	
01/13/12	0.00		3.59	
01/14/12	0.00		3.65	
01/15/12	0.00		3.71	
01/16/12	0.00		3.76	
01/17/12	0.03		2.59	
01/18/12	0.00		3.07	
01/19/12	0.00		3.35	
01/20/12	0.00		2.78	snow
01/21/12	0.00		2.97	
01/22/12	0.00		3.13	
01/23/12	7.46		25.43	rain, 40°F
01/24/12	0.01		7.47	
01/25/12	0.01		2.69	
01/26/12	0.01		2.56	
01/27/12	0.03		2.24	
01/28/12	0.00		2.51	snow flurries
01/29/12	0.00		1.85	snow flurries
01/30/12	0.01		2.70	
01/31/12	0.08		1.88	

Hinsdale rain gage is not operational during the winter.

Chestnut Street Project
Hinsdale, Illinois

Change Order Field Record

Change Request No.	Date	Pay Item	Description and Reason for Change	Status	Estimated Cost		Submitted Cost		Change Order No.	Board Approval Date[1]
					Addition	Deduction	Addition	Deduction		
1		TREE ROOT PRUNING	Addition of tree root pruning for installation of services on Thurlow Street.	Complete			$ 7,650.00		1	09/20/11
1		VARIOUS TREE REMOVAL & TREE PRUNING	Village Forester will perform tree removal and pruning as required.	Complete				$ 7,675.00	1	09/20/11
2	9/9/2011	TEMPORARY RAMP	Relocation of temporary stone acess from Madison Street	Complete			$ 971.57		2	11/15/11
3	9/12/2011		Additional storm sewer for the alley north of Chestnut between Madison and Thurlow.	In Process	$ 8,149.20					
4		MANHOLE, TYPE A	Replace Brick Sanitary Manhole	Complete			$ 1,882.40		2	11/15/11
5		TRENCH BACKFILL	Excavate and backfill Nicor trenchs on Thurlow Street. This will be charged to Nicor by the Village of Hinsdale.	Complete			$ 7,526.72	$ 7,526.72	2	11/15/11
6	9/29/2011	VALVE VAULT, TYPE A 5' - DIA.	Replace 6-foot dia. Valve Vaults with 4-foot dia. Valve Vaults	Complete				$ 1,000.00	2	11/15/11
7	9/30/2011	WATER VALVES, 4"	Additional "inserta" water valve required because VOH Wtr Division is unable to isolate the existing 4" water main.	Complete			$ 6,900.00		2	11/15/11
8	10/3/2011		Tie-in for existing water main. ($5,100 addition) (Village opinion: WM tie-in's are incidental to water main construction. Martam will appeal.)	In Process						
9	10/11/2011	TIME & MATERIALS	Revised connection to 96-inch diameter sewer due to utility conflicts.	Complete				$ 2,849.33		
10	10/31/2011		Monroe / Chestnut 4-inch water main replacement	Complete			$ 13,423.50			
11		VALVE, WATER, 8"	Additonal water valve due to conflict with Level 3 duct on intersection of Thurlow and Chicago	Complete			$ 1,808.31			
12		VALVE, WTR ~~1-1/2"~~ 6"	Valve for service to 534 Chestnut as requested by Water Department.	Complete			$ 775.79			
13		CUT & CAP 12" WM	Cut and cap 12" raw watermain requested by Water Dept.	Complete			$ 3,600.00			
14		WATERMAIN REPAIR	Repair of existing watermain during excavation	Complete			$ 597.55			
15	2/13/2012		~~Reconciliation~~ of Phase 1 construction by line item	In Process		$ 55,280.42				
		INTERIM	BALANCING							
			Total		$ 8,149.20	$ 55,280.42	$ 45,135.84	$ 19,051.05		
			Construction Net Change (includes Estimated Cost)				$ 21,046.43	Deduction		

Village of Hinsdale
Grant Funds Awarded in 2009 - 2012

Source	Program	Purpose	Funds Available	Amount
Illinois Commerce Commission	Crossing Safety Improvement Program	Oak Street Bridge - 60% Funding	2015 Capital Budget	$10,200,000
Senator Dillard	State Capital Bill	Oak Street Bridge	Effective January 1, 2011	$825,000
West Suburban Mass Transit	Car Sale Proceeds	Oak Street Bridge Eng/Construction	50/50 Reimbursement	$395,000
Illinois Dept of Transportation	Federal Highway Bridge Program	Oak Street Bridge Phase I	July 2010 - 80/20	$680,000
DuPage Mayors & Managers	Federal Stimulus	S. Garfield Reconstruction	Paid Through IDOT	$1,632,000
Senator Dillard & Rep Bellock	Emergency Repair Program	Street resurfacing	Upon Project Completion	$300,000
Representative Bellock	State Capital Bill	N. Washington Reconstruction	Upon issuance of bonds	$340,000
New Local Transportation Projects	State Capital Bill	Road Improvements	20% released October, 2010	$389,540
Lyons Township	Bond Proceeds	KLM Park Pavilion	Upon Project Completion	$150,000
DuPage Mayors & Managers	STP Program	Oak Street Bridge	2015 Capital Budget	$3,830,000
IDNR	OSLAD	Improvements to KLM	Awarded	$150,000
IEPA	ARRA/State Revolving Loan	Garfield Sewer Separation	Loan docs received 7/05/11	$444,160
IEPA	ARRA/State Revolving Loan	Chestnut Sewer Separation	Loan docs received 8/16/11	$3,728,196
DuPage Mayors & Managers	Surface Transportation Projects	Hinsdale Avenue Resurfacing		$311,627
DuPage Mayors & Managers	Surface Transportation Projects	Chicago Avenue Resurfacing	Approved by DMMC	$203,291
DuPage Mayors & Managers	Surface Transportation Projects	York/Garfield Resurfacing	11/16/11 for FY 2017	$293,442
DuPage Mayors & Managers	Surface Transportation Projects	Madison Resurfacing		$317,765
Total				$24,190,021

Village of Hinsdale
Grant Applications Under Consideration

Source	Program	Purpose	Status	Amount
IDOT	Federal Highway Bridge Grant	Oak Street Bridge Phases II & III	Committed to by IDOT	$4,895,000
IEPA	Illinois Green Infrastructure Grant	Woodlands Phase 1	Submitted 12/12/11	$750,000
Total				$5,645,000

DATE: February 13, 2012

REQUEST FOR BOARD ACTION

AGENDA SECTION NUMBER EPS Consent Agenda	**ORIGINATING DEPARTMENT** Community Development
ITEM Alley Vacation Request – 228 Fuller Road	**APPROVAL** Dan Deeter Village Engineer

Attached please find an ordinance vacating a portion of a public alley adjacent to 228 Fuller Road. Also included is the appraisal report establishing a fair market value for the vacated property. A plat of vacation will be prepared upon approval of this request for recording at DuPage County.

This right-of-way does contain underground utilities. If an alley vacation is approved, the Village will require the vacated area to be designated as a drainage and utility easement. The right-of-way does not contain a paved or unpaved alley surface (that is, it is not currently used for routine public vehicular access). To date, no other approved alley vacations have occurred on this block.

The appraisal established the value of the property at approximately $20.40 per square foot. The property to be vacated contains an area of 2,205 square feet. The total appraised value of the property is $45,000.

MOTION: To Recommend Adoption of an Ordinance Vacating Half of a Public Alley Right-of-Way Situated West and Adjoining 228 East Fuller Road at a Purchase Price of $45,000.

APPROVAL	**APPROVAL**	**APPROVAL**	**APPROVAL**	**MANAGER'S APPROVAL**

COMMITTEE ACTION

BOARD ACTION:

VILLAGE OF HINSDALE

ORDINANCE NO. _____

AN ORDINANCE AUTHORIZING THE VACATION OF A CERTAIN PORTION OF AN UNIMPROVED ALLEY SITUATED WEST OF AND ADJOINING 228 EAST FULLER ROAD IN THE VILLAGE OF HINSDALE, DUPAGE AND COOK COUNTIES, ILLINOIS

WHEREAS, the Village of Hinsdale, DuPage and Cook Counties, Illinois (the "Village") is a duly authorized and existing municipal corporation created under the provisions of the laws of the State of Illinois and under the provisions of the Illinois Municipal Code, as from time to time supplemented and amended; and

WHEREAS, the property owner of 228 E. Fuller Road, Hinsdale, Illinois, which property is identified by permanent index number ("P.I.N.") 09-01-216-001, has requested that a certain portion of an alley, as more fully described below, be vacated in order to be developed and maintained by said property owner; and

WHEREAS, Section 11-91-1 of the Illinois Municipal Code, 65 ILCS 5/11-91-1 *et seq.* (2007) (the "Code"), authorizes the Village to determine whether or not the public interest is served by vacating an alley, or part thereof, within its corporate boundaries, by an ordinance duly adopted by the affirmative vote of three-fourths of the trustees then holding office; and

WHEREAS, the Code further provides that upon vacation of an alley, or any part thereof, by the Village, title to the vacated property vest in the then owner or owners of land abutting thereon; and

WHEREAS, the Village President and Board of Trustees of the Village of Hinsdale (the "Corporate Authorities") have determined that the relief to the public from the further burden and responsibility of maintaining a certain portion of the alley, as more fully described below, and to return said portion to the tax rolls for the benefit of all taxing bodies is in the public interest.

NOW THEREFORE, BE IT ORDAINED by the President and Board of Trustees of the Village of Hinsdale, DuPage and Cook Counties, State of Illinois, as follows:

Section 1. Recitals Incorporated. The above recitals and findings are incorporated herein and made a part hereof.

Section 2. Vacation of Unimproved Alley. Pursuant to the terms of this Ordinance, the Village shall vacate a 15' x 147' portion of the unimproved alley situated west of and adjoining 228 East Fuller Road, Hinsdale, Illinois (the "Subject Property"), legally described, as follows:

P.I.N. 09-01-216-001

THE WEST 97.95 FEET (EXCEPT THE WEST 30 FEET THEREOF DEDICATED FOR PUBLIC STREET) OF LOT 43 OF HINSDALE HIGHLANDS, BEING A SUBDIVISION OF PART OF THE NORTHEAST QUARTER OF SECTION 1, TOWNSHIP 38 NORTH, RANGE 11, EAST OF THE THIRD PRINCIPLA MERIDIAN, ACCORDING TO THE PLAT THEREOF RECORDED APRIL 8, 1922 AS DOCUMENT 155000, IN DUPAGE COUNTY, ILLINOIS.

Section 3. Plat of Vacation Approved. The Plat of Vacation, a copy of which is attached hereto as Exhibit A and made a part hereof, is approved.

Section 4. Conditions of Vacation. The Subject Property is vacated subject to any existing easement of public record for any public or private utility for the maintenance, renewal and construction or reconstruction of public and private utilities and that the Village reserves unto itself as a corporate municipality and to any public utility, its successors or assigns, the right to maintain and relocate any respective facilities in, under, across and along those parts of the public alley as herein vacated, with the right of access thereto at all times for any and all such purposes as may be reasonably required for the construction, maintenance and efficient operation of said equipment pursuant to any existing easement of public record.

Section 5. Payment of Consideration and Title to Vacated Property. Upon the vacation of the Subject Property, title thereto shall be acquired by and vest to the property owner of 228 E. Fuller Road, Hinsdale, Illinois upon the payment of forty-five thousand dollars ($45,000.00) to the Village by the property owner as fair market value for the Subject Property. The vacation of the Subject Property, and the recording of the Plat of Vacation, shall not be effective until said payment is received pursuant to Section 11-91-1 of the Code, 65 ILCS 5/11-91-1.

Section 6. Execution of Documents. The Village President, Village Clerk and all other officials are hereby authorized to take any and all action and execute any and all documents required to implement said vacation and record this Ordinance and the Plat of Vacation with the applicable county recorder of deeds upon the payment of the consideration set forth in Section 5 of this Ordinance.

Section 7. Severability and Repeal of Inconsistent Ordinances. If any section, paragraph, clause or provision of this Ordinance shall be held invalid, the invalidity thereof shall not affect any of the other provisions of this Ordinance. All ordinances in conflict herewith are hereby repealed to the extent of such conflict.

Section 8. Effective Date. This Ordinance shall be in full force and effect from and after its passage, approval, and publication in pamphlet form in the manner provided by law.

PASSED this _____ day of _____, 2012.

AYES:

NAYES:

ABSENT:

APPROVED this _____ day of _____, 2012

_____
Thomas Cauley, Village President

ATTEST:_____
Christine Bruton, Village Clerk

PIN # 0901-216-001

December 6, 2011

Mr. Daniel Deeter, P.E.
Village Engineer
Village of Hinsdale
19 E. Chicago Avenue
Hinsdale, Illinois 60521-3489

RE: Village property located west of, and adjacent to 228 Fuller Road, Hinsdale.

Dear Mr. Deeter:

My name is Anthony J Pasquinelli and I am the Division Manager for BnA Homes. BnA Homes, LLC has signed a contract to purchase the property located at 228 Fuller Road. It is my understanding that the Village of Hinsdale is interested in selling the aforementioned property; and Bna Homes, LLC is interested in purchasing the property.

I have informed that the first step of the process is to send a letter expressing interest and forwarding a check in the amount of $400 to pay for the appraisal of the property. The check is enclosed.

Allow this letter to also serve as a letter of intent to purchase the Village property stated above subject to BnA Homes, LLC and the Village of Hinsdale reaching a mutual agreement on price and terms for the transaction. The acquisition would also be subject to BnA Homes, LLC closing on the property located at 228 Fuller Road, Hinsdale.

I would like to pursue this transaction with the Village of Hinsdale expeditiously. Please let me know what other information you made need from me, or what other steps need to be taken.

I appreciate your consideration, my cell number is 708-370-5831 and the main office number is 630-455-3040.

Very Truly,

By

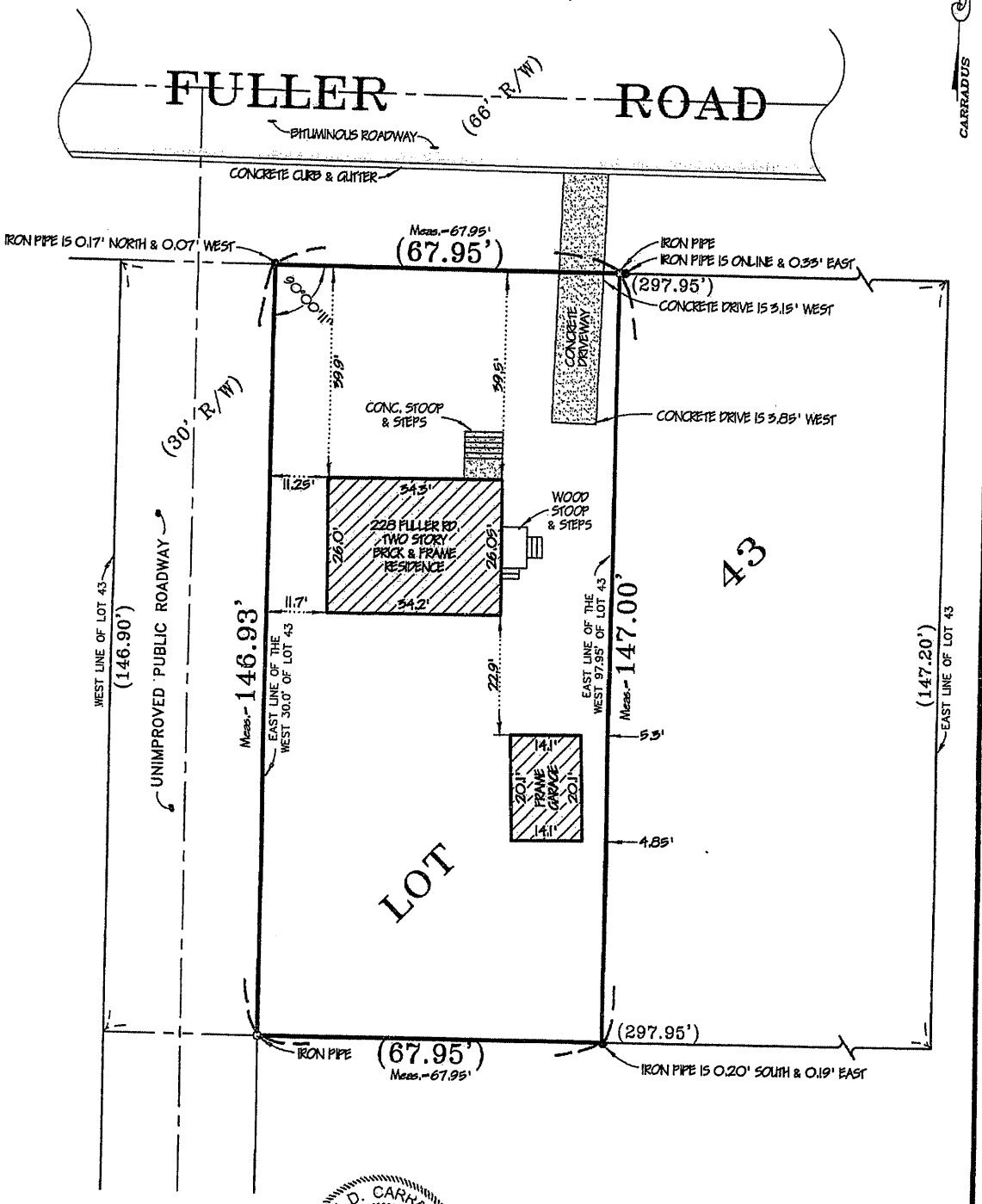
Anthony J Pasquinelli
BnA Management, LLC
BnA Homes, LLC

PLAT OF SURVEY

LEGEND
- ● Monumentation Found
- ○ Monumentation Set (RLS 35-2551)
- (50') Record Dimension
- —x— Fence Line

THE WEST 97.95 FEET (EXCEPT THE WEST 30 FEET THEREOF DEDICATED FOR PUBLIC STREET) OF LOT 43 OF HINSDALE HIGHLANDS, BEING A SUBDIVISION OF PART OF THE NORTHEAST QUARTER OF SECTION 1, TOWNSHIP 38 NORTH, RANGE 11, EAST OF THE THIRD PRINCIPAL MERIDIAN, ACCORDING TO THE PLAT THEREOF RECORDED APRIL 8, 1922 AS DOCUMENT 155000, IN DU PAGE COUNTY, ILLINOIS.

AREA OF SITE=9,986 SQ.FT.



ALLEN D. CARRADUS 35-2551 PROFESSIONAL LAND SURVEYOR STATE OF ILLINOIS WHEATON, ILLINOIS

NOTES
1. All distances shown hereon are in feet and decimal parts thereof corrected to 68° f. Distances shown along curved lines are Arc Measurements unless otherwise noted.
2. Compare the Legal Description, Building Lines, and Easements as shown hereon with your Deed, Title Insurance Policy or Title Commitment.
3. Consult local authorities for additional setbacks and restrictions not shown hereon.
4. Compare all survey points and report any discrepancies immediately.
5. Consult utility companies and municipalities prior to the start of any construction.
6. Dimensions to and along buildings are exterior foundation measurements.
7. Do Not Assume distances from scaled measurements made hereon.

STATE OF ILLINOIS) SS
COUNTY OF DU PAGE)

THIS IS TO CERTIFY THAT I, ALLEN D. CARRADUS, A PROFESSIONAL LAND SURVEYOR, LICENSED IN THE STATE OF ILLINOIS, HAVE SURVEYED THE PROPERTY AS DESCRIBED HEREON AND THAT THE ANNEXED PLAT IS A CORRECT AND TRUE REPRESENTATION THEREOF, AND THAT THIS PROFESSIONAL SERVICE CONFORMS TO THE CURRENT ILLINOIS MINIMUM STANDARDS FOR A BOUNDARY SURVEY.

SIGNED AND SEALED AT WHEATON, ILLINOIS THIS 20th DAY OF December, A.D. 2011
BY Allen D. Carradus, ILLINOIS PROFESSIONAL LAND SURVEYOR NO. 35-2551. MY LICENSE EXPIRES NOVEMBER 30, 2012.

ALLEN D. CARRADUS LAND SURVEYOR
Residential & Commercial Land Surveying Services
108 W. Liberty Drive, Wheaton, Illinois 60187
(630) 588-0416 (Fax) 653-7682

PREPARED FOR:				
FREEDMAN, ANSELMO, LINDBERG LLC				
DRAWN BY: CMG	DATE OF FIELD WORK: 12/20/11	SCALE: 1" = 20'	FLD.BK. - PAGE 300-02	PROJECT NO. 23506

SUMMARY APPRAISAL REPORT

A 15' X 147' PORTION OF THE UNIMPROVED
ALLEY SITUATED WEST AND ADJOINING
228 EAST FULLER ROAD
HINSDALE, ILLINOIS

Prepared For

Mr. Dan Deeter
Village of Hinsdale
19 East Chicago Avenue
Hinsdale, Illinois 60521

Prepared By

C.A. Benson & Associates, Inc.
419 North La Grange Road
La Grange Park, Illinois 60526

C.A. BENSON & ASSOCIATES, INC.
419 North La Grange Road - La Grange Park, IL 60526
P.O. Box 157 - La Grange, IL 60525
(708) 352-6056 Fax (708) 352-6070

January 31, 2012

Mr. Dan Deeter
Village of Hinsdale
19 East Chicago Avenue
Hinsdale, IL 60521

Re: Summary Appraisal of a 15' x 147' portion of unimproved alley situated west and adjoining 228 East Fuller Road, Hinsdale, Illinois

Dear Mr. Deeter:

In accordance with your request, I have inspected the above captioned property and analyzed all pertinent factors relative to it in order to estimate its "as is" market value of the fee simple interest. The property was inspected on January 30, 2012, which is the effective date of this valuation.

The property consists of a 15' x 147' portion of unimproved alley located west and adjoining 228 East Fuller Road, Hinsdale, Illinois. It contains 2,205 square feet and is zoned R-4, Single-Family Residential.

Based on this analysis, it is my opinion that the "as is" Market Value of the subject property as of January 30, 2012 was

FORTY-FIVE THOUSAND DOLLARS
($45,000)

This is a Summary Appraisal Report, which is intended to comply with the reporting requirements set forth under Standards Rule 2-2(b) of the Uniform Standards of Professional Appraisal Practice for a Summary Appraisal Report. As such, it presents only summary discussions of the data, reasoning and analyses that were used in the appraisal process to develop the appraiser's opinion of value. Supporting documentation concerning the data, reasoning and analyses is retained in the appraiser's file. The depth of discussion contained in this report is specific to the needs of the client and for the intended use stated below. The appraiser is not responsible for unauthorized use of this report.

PURPOSE OF THE APPRAISAL:

The purpose of this appraisal is to provide my best estimate of the market value of the subject real property as of the effective date. *Market Value* is defined by the federal financial institutions regulatory agencies as follows:

Market Value means the most probable price which a property should bring in a competitive and open market under all conditions requisite to a fair sale, the buyer and seller each acting prudently and knowledgeably, and assuming the price is not affected by undue stimulus. Implicit in this definition is the consummation of a sale as of a specified date and the passing of title from seller to buyer under conditions whereby:

1. Buyer and seller are typically motivated;
2. Both parties are well informed or well advised, and acting in what they consider their own best interests;
3. A reasonable time is allowed for exposure in the open market;
4. Payment is made in terms of cash in U.S. dollars or in terms of financial arrangements comparable thereto; and
5. The price represents the normal consideration for the property sold unaffected by special or creative financing or sales concessions granted by anyone associated with the sale.

(Source: Office of the Comptroller of the Currency under 12 CFR, Part 34, Subpart C-Appraisals, 34.42 Definitions (f))

INTENDED USE: The function of this appraisal is to assist the Village of Hinsdale with a possible sale of the subject.

INTENDED USER: The intended user of this appraisal report is the client.

INTEREST VALUED: Fee simple

DATE OF INSPECTION: January 30, 2012

EFFECTIVE DATE OF VALUE: January 30, 2012

DATE OF REPORT: January 31, 2012

APPRAISAL DEVELOPMENT AND REPORTING PROCESS: In preparing this appraisal, I have

- Inspected the subject property;
- Gathered and confirmed information on comparable sales;
- Applied the Sales Comparison Approach to Value to arrive at an indicated value.

This Summary Appraisal Report is a brief recapitulation of my data, analyses and conclusions. Supporting documentation is retained in my file.

COMPETENCY OF THE APPRAISER: The appraiser has the appropriate knowledge and experience to complete this assignment competently as illustrated by the Qualifications of the Appraiser statement contained within this report.

DESCRIPTION OF REAL ESTATE APPRAISED:

The subject property is situated in the Village of Hinsdale, approximately 20-miles southwest of the City of Chicago's Central Business District. Hinsdale is bordered by Oak Brook to the north, Burr Ridge to the south, Western Springs to the east and Clarendon Hills to the west.

Hinsdale is a residential community that has a population of 18,452 residents as of July 2009 and an average family income of $150,024 (2009). Over the past 12 months, the average sale price of a single-family residence in Hinsdale was $991,049, which is a 1.5% decrease over the prior 12 month average sale price of $1,005,754. This reflects a softening in values as the economy continues to under-perform.

Hinsdale is a substantially built-up community and is one of the communities in the Southern DuPage County suburbs, which include Burr Ridge, Clarendon Hills, Darien, Downers Grove, Glen Ellyn, Lisle, Naperville, Oak Brook, Oakbrook Terrace, Warrenville, Westmont, Wheaton, Willowbrook, Winfield and Woodridge. The majority of these are mid-aged to older established communities that have reached maturity. Redevelopment of new single-family residences is occurring in Hinsdale, Clarendon Hills and Downers Grove on sites where older residences have been demolished. The overall composition of the area provides most amenities such as adequate employee base, established commercial/residential areas and municipal services, educational facilities, etc. The area hospitals include Good Samaritan, La Grange Community and Hinsdale. Hinsdale has a thriving central business district and the Oak Brook Center and Yorktown Center regional shopping malls are in nearby driving distance.

The major transportation systems include the North-South Tollway (I-355), the Tri-State Tollway (I-294) and the East-West Tollway (I-88). In addition, the Metra commuter trains and Pace buses service Hinsdale.

More specifically, the subject property is located in the northeast section of Hinsdale. The immediate area is approximately 98% built-up with single-family residences of varying architectural designs in the range of 0 to 80+ years. The price range varies from $250,000 for smaller existing single-family residences to in excess of $1,800,000 for new custom two story residences. Many of the older, smaller residences have been torn down and redeveloped with large custom single-family residences. The immediate occupancy of the neighborhood consists of professionals, executives and white-collar workers. Maintenance level is good and there were no adverse conditions noted on the date of inspection.

Overall, the community of Hinsdale and the subject neighborhood are stable without any land changes anticipated with the exception of residential development of new single residents on lots that were previously improved with older homes. The strengths of the community include the viable central business district, the good community services, ample shopping, proximity to major transportation systems and the historically strong demand for residential, retail and office properties.

The subject property is the east 15' of a 30' wide unimproved alley. It has a depth of 147', which is equal to the depth of the adjoining residence located at 228 East Fuller Road. It is rectangular in shape and has a calculated area of 2,205 square feet. It is in an R-4, Single Family Residence District which requires a minimum lot area of 10,000 square feet and 70 or 80 feet of street frontage depending on whether the site is an interior or corner parcel. The subject property is not buildable and would be of use only to the adjoining property owner. It is in a zone "X" area of minimal flooding activity per FEMA Map #17043C0903H, dated December 16, 2004.

ESTIMATE OF EXPOSURE TIME:

The subject property is a 15' x 147' section of an unimproved alley, which can only be sold to the adjoining property owner. As such, estimating a marketing time is futile as a potential sale is reliant on the adjoining property owner's willingness to buy the property. The typical marketing time for area buildable sites and single-family residences is 3 to 9 months.

PERMANENT INDEX NUMBER: The subject is a section of unimproved alley which has no permanent index number.

TOTAL 2010 ASSESSED VALUE: Not assessed

THREE-YEAR PROPERTY HISTORY:

According to FIRREA and the Uniform Standards of Professional Practice of the Appraisal Foundation, I am required to report and analyze any sale transactions involving the subject property during the past three years or any listing or pending sale transaction involving the subject property.

The subject is part of an unimproved alley under ownership by the Village of Hinsdale. This appraisal will be used as an estimate of market value for a possible sale of the property.

HIGHEST AND BEST USE ANALYSIS:

The subject consists of a 15' x 147', rectangular shaped portion of unimproved alley. It cannot be developed by itself and has value only to the adjoining property owner. It is my opinion that the highest and best use of the subject property is in conjunction with the adjoining residential property.

SUMMARY OF ANALYSIS AND VALUATION:

As indicated, the Sales Comparison Approach to Value will only be used.

SALES COMPARISON APPROACH TO VALUE AS IMPROVED:

Definition: A set of procedures in which a value indication is derived by comparing the property being appraised to similar properties that have been sold recently, then applying appropriate units of comparison, and making adjustments to the sale prices of the comparables based on the elements of comparison.*

*Source: *Page 255, The Dictionary of Real Estate Appraisal, Appraisal Institute, Fourth Edition.*

SALES COMPARISON APPROACH TO VALUE - Continued

In order to estimate the market value of the subject property by the Sales Comparison Approach, I have analyzed the following sales.

1. **418 East Hickory Street, Hinsdale** was reported sold in September 2011 for $250,000. This is a 54.17 foot by 132 foot parcel zoned R-4, containing 7,150 square feet. The sales price was equal to $34.96 per square foot.

2. **229 East Fuller Road, Hinsdale** was reported sold in May 2011 for $280,000. This is a 50 foot by 150 foot parcel zoned R-4, containing 7,500 square feet. The sales price was equal to $37.33 per square foot.

3. **346 Minneola Street, Hinsdale** was reported sold in July 2011 for $355,000. This is a 59.59 foot by 150 foot parcel zoned R-4, containing 8,938 square feet. The sale price was equal to $39.72 per square foot.

4. **347 Ravine Road, Hinsdale** was reported sold in March 2011 for $360,000. This is an irregular shaped parcel zoned R-4, containing 11,453 square feet. The sale price was equal to $31.43 per square foot.

Commentary

The above sales were all improved with older smaller single-family residences and the sale prices were reflective of land value. Since their acquisitions, one of the existing residences has been demolished and two others are probable tear downs. They sold from $31.43 to $39.72 per square foot and averaged $35.86 per square foot for a buildable site.

The subject consists of a 2,205 square foot unimproved alley that is not buildable and can only be sold to an adjoining property owner. Historical comparisons of varying size sites indicated that additional site depth above the standard size lot contributes at a rate of 45% of the base lot and that additional site width contributes at the rate of 55% of the base lot. The subject represents additional width and would have a value of 55% of the base lot. For this analysis, 55% of the $35.86 (rd) average value of a buildable site or $19.72 per square foot, rounded to $20.00 per square foot is indicated.

SALES COMPARISON APPROACH TO VALUE - Continued

Based on the above analysis, it is my opinion that $20.00 per square foot is indicated for the subject property.

2,205 square feet @ $20.00 per square foot =	$44,100
INDICATED VALUE BY THE SALES COMPARISON APPROACH:	**$45,000 (Rd)**

COMMENT AND FINAL VALUE CONCLUSION:

Based on the sales data analyzed in this report, it is my opinion that the "as is" fee simple market value of the subject property as of January 30, 2012 was

FORTY-FIVE THOUSAND HUNDRED DOLLARS
($45,000)

Respectfully submitted,

C.A. BENSON & ASSOCIATES, INC.

Charles A. Benson, Jr., SRA
Illinois State Certified General Real Estate Appraiser
License #553.000387 (Exp. 9/30/13)

ASSUMPTIONS AND LIMITING CONDITIONS

1. This is a Summary Appraisal Report, which is intended to comply with the reporting requirements set forth under Standard Rule 2-2(b) of the Uniform Standards of Professional Appraisal Practice for a Summary Appraisal Report. As such, it might not include full discussions of the data, reasoning, and analyses that were used in the appraisal process to develop the appraiser's opinion of value. Supporting documentation concerning the data, reasoning and analyses is retained in the appraiser's file. The information contained in this report is specific to the needs of the client and for the intended use stated in this report. The appraiser is not responsible for unauthorized use of this report.

2. No responsibility is assumed for legal or title considerations. Title to the property is assumed to be good and marketable unless otherwise stated in this report.

3. The property is appraised free and clear of any or all liens and encumbrances unless otherwise stated in this report.

4. Responsible ownership and competent property management are assumed unless otherwise stated in this report.

5. The information furnished by others is believed to be reliable. However, no warranty is given for its accuracy.

6. All engineering is assumed to be correct. Any plot plans and illustrative material in this report are included only to assist the reader in visualizing the property.

7. It is assumed that there are no hidden or unapparent conditions of the property, subsoil or structures that render it more or less valuable. No responsibility is assumed for such conditions or for arranging for engineering studies that may be required to discover them.

8. It is assumed that there is full compliance with all applicable federal, state and local environmental regulations and laws unless otherwise stated in this report.

9. It is assumed that all applicable zoning and use regulations and restrictions have been complied with, unless a non-conformity has been stated, defined and considered in this appraisal report.

10. It is assumed that all required licenses, certificates of occupancy or other legislative or administrative authority from any local, state or national governmental or private entity or organization have been or can be obtained or renewed for any use on which the value estimates contained in this report are based.

11. Any sketch in this report may show approximate dimensions and is included to assist the reader in visualizing the property. Maps and exhibits found in this report are provided for reader reference purposes only. No guarantee as to accuracy is expressed or implied unless otherwise stated in this report. No survey has been made for the purpose of this report.

ASSUMPTIONS AND LIMITING CONDITIONS - Continued

12. It is assumed that the utilization of the land and improvements is within the boundaries or property lines of the property described and that there is no encroachment or trespass unless otherwise stated in this report.

13. The appraiser is not qualified to detect hazardous waste and/or toxic materials. Any comment by the appraiser that might suggest the possibility of the presence of such substances should not be taken as confirmation of the presence of hazardous waste and/or toxic materials. Such determination would require investigation by a qualified expert in the field of environmental assessment. The presence of substances such as asbestos, urea-formaldehyde foam insulation, or other potentially hazardous materials may affect the value of the property. The appraiser's value estimate is predicated on the assumption that there is no such material on or in the property that would cause a loss in value unless otherwise stated in this report. No responsibility is assumed for any environmental conditions or for any expertise or engineering knowledge required to discover them. The appraiser's descriptions and resulting comments are the result of the routine observations made during the appraisal process.

14. Unless otherwise stated in this report, the subject property is appraised without a specific compliance survey having been conducted to determine if the property is or is not in conformance with the requirements of the Americans with Disabilities Act. The presence of architectural and communications barriers that are structural in nature that would restrict access by disabled individuals may adversely affect the property's value, marketability or utility.

15. Any proposed improvements are assumed to be completed in a good workmanlike manner in accordance with the submitted plans and specifications.

16. The distribution, if any, of the total valuation in this report between land and improvements applies only under the stated program of utilization. The separate allocations for land and buildings must not be used in conjunction with any other appraisal and are invalid if so used.

17. Possession of this report, or a copy thereof, does not carry with it the right of publication. It may not be used for any purpose by any person other than the party to whom it is addressed without the written consent of the appraiser, and in any event, only with proper written qualification and only in its entirety.

18. Neither all nor any part of the contents of this report (especially any conclusions as to value, the identity of the appraiser, or the firm with which the appraiser is connected) shall be disseminated to the public through advertising, public relations, news sales, or other media without prior written consent and approval of the appraiser.

CERTIFICATION

I certify that, to the best of my knowledge and belief…

- the statements of fact contained in this report are true and correct.
- the reported analysis, opinion and conclusions are limited only by the reported assumptions and limiting conditions, are my personal, unbiased professional analyses, opinions and conclusions.
- I have no present or prospective interest in the property that is the subject of this report, and I have no personal interest or bias with respect to the parties involved.
- my compensation is not contingent on the reporting of a pre-determined value or direction in value that favors the cause of the client, the amount of the value estimate, the attainment of a stipulated result or the occurrence of a subsequent event.
- the appraisal assignment was not based on a requested minimum valuation, a specific valuation or the approval of a loan.
- my analysis, opinion and conclusions were developed, and this report has been prepared in conformity with the requirements of the *Code of Professional Ethics* and the *Standards of Professional Practice* of the *Appraisal Institute.*
- the use of this report is subject to the requirements of the *Appraisal Institute* relating to review by its duly authorized representatives.
- as of the date of this report, I have completed the requirements of the continuing education program of the *Appraisal Institute.*
- I have made a personal inspection of the property that is the subject of this report.
- No one provided significant professional assistance to the person signing this report.

Charles A. Benson, Jr., SRA
Illinois State Certified General Real Estate Appraiser
License #553.000387 (9/30/13)

QUALIFICATIONS OF CHARLES A. BENSON, JR.

EDUCATION

University of Wisconsin, Madison, B.B.A., 1974
Majored in Real Estate and Urban Land Economics

APPRAISAL COURSES SUCCESSFULLY COMPLETED

S.R.E.A. Courses 101 (1972), 201 (1976), 202 (1989)
A.I.R.E.A. Course VIII (1978)
Standards of Professional Practice - Parts A & B, Appraisal Institute 1998
USPAP Update - 2009

SEMINARS

Residential Design and Functional Utility; Subdivision Analysis; Rates, Ratios & Reasonableness; Valuation Under Federal Lending Regulations: Appraisal of Retail Properties; Industrial Valuation: Conditions of the Chicago Real Estate Market, 2007; Fair Lending and the Appraiser: Valuation of Detrimental Conditions in Real Estate; Partial Interest Valuation – Undivided; Forecasting Revenue; Illinois Appraiser's Update – 2004 thru 2009; Professionals Guide to the Uniform Residential Appraisal Report; Appraisal Challenges: Declining Markets and Sales Concessions; The Discounted Cash Flow Model: Concepts, Issues and Applications.

EXPERIENCE

Actively engaged in the real estate appraisal business since 1975; has made appraisal of thousands of properties of various types including single family residences, apartment buildings, commercial, industrial, special use properties and vacant land.

Clients

Appraisal clients include: Inland Bank, American Metro Bank, Banco Popular, Midwest Bank, National City Bank, First National Bank of LaGrange, Highland Community Bank, Cathay Bank, Pacific Global Bank, Suburban Bank & Trust, United Trust Bank, The University of Chicago, attorneys, individuals, corporations and others.

Qualified as an expert witness for the Circuit Court of Cook County and the Circuit Court of DuPage County.

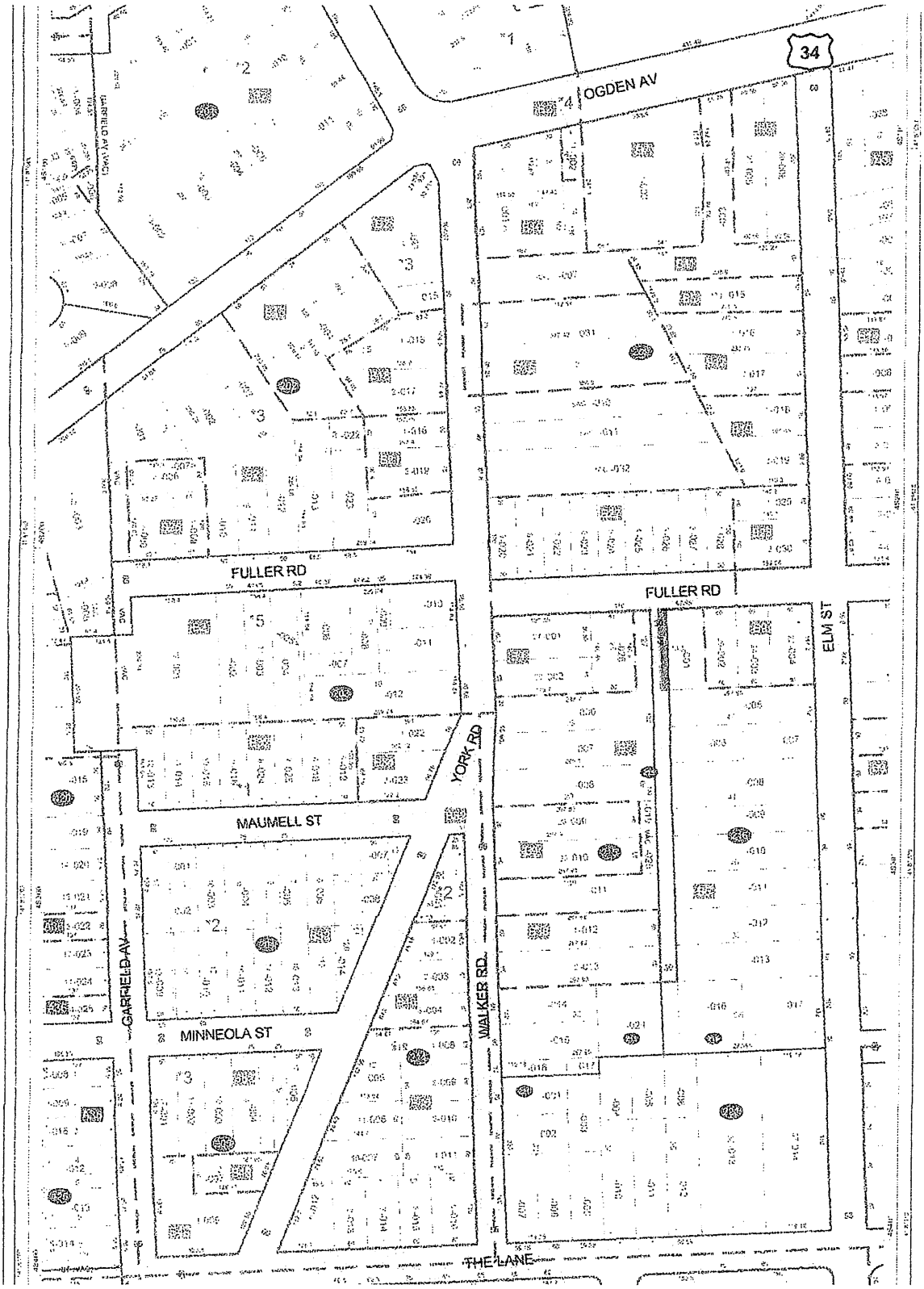
AFFILIATIONS

- The Appraisal Institute - Received SRA designation in April 1988.
- Holds State of Illinois Real Estate Broker's License #475.090669.
- Member of the Realtor Association of the West/South Suburban Chicagoland.
- State Certified General Real Estate Appraiser, State of Illinois, License No. 553.000387.

ADDENDUM

Sidwell Map

SIDWELL MAP
(Subject Shaded in Red)



DATE January 18, 2012

REQUEST FOR BOARD ACTION

AGENDA EPS Agenda **SECTION NUMBER**	**ORIGINATING** **DEPARTMENT** PUBLIC SERVICES
ITEM **Allied Waste Contract Extension**	**APPROVAL**

Public Services staff has presented terms for a 3 year contract extension with Allied Waste Services for the collection and disposal of solid waste, landscape waste, and recyclable materials. The existing contract pricing has been revised.

Public Services staff would like to recommend to Committee the revision and extension of bid #1380 for the service of collection, and disposal of solid waste, landscape waste, and recyclable materials to Allied Waste Services and if Committee concurs the following motion would be appropriate:

MOTION: To award the extension of Contract #1380 between the Village of Hinsdale and Allied Waste Services for the Collection and Disposal of Residential Solid Waste, Landscape Waste, and Recyclable Materials for 3 years with revised pricing to commence on May 1, 2012.

STAFF APPROVALS

APPROVAL	**APPROVAL**	**APPROVAL**	**APPROVAL**	**MANAGER'S APPROVAL**

COMMITTEE ACTION:

BOARD ACTION: