

APPENDIX A
AGENCY SURVEY

Dear NCHRP 6-16 Survey Respondent,

Levelton Engineering Ltd., under the AASHTO-sponsored National Cooperative Highway Research Program (NCHRP), is conducting Project 6-16, "Guidelines for the Selection of Snow and Ice Control Materials to Mitigate Environmental Impacts." The objectives of this research is to develop guidelines for selection of snow and ice control materials based on their constituents, performance, environmental impacts, cost and site specific conditions.

Every year, considerable quantities of snow and ice control products are applied to highways, and agencies have questioned the relative impacts on the environment and infrastructure of these products. Additionally, new product formulations are continually being developed. There is therefore a need for rational decision-making guidelines to assist DOT maintenance managers in selecting the most appropriate snow and ice control materials for the conditions that exist in their jurisdictions.

An important component of this study is a survey questionnaire to assess current practices, environmental concerns, corrosion concerns, product selection processes and products available for use. Additionally, if there are recent reports or studies in progress that may be relevant, we would appreciate receiving copies so we can fully assess the topic.

The survey questionnaire addresses many aspects of snow and ice control practices, and it may be appropriate for different individuals within an organization to complete the various parts. If so, please ensure each respondent is identified, and that the completed survey is returned as a single response.

We realize that you receive many inquiries like this that take up a lot of your time. We therefore sincerely appreciate your efforts in sharing your experience and information with us. A copy of the tabulated results will be sent to you when the data has been compiled.

PLEASE RETURN THE COMPLETED SURVEY BY FAX or EMAIL BY: September 15, 2003

Return to: Mr. Brent T. Mussato
Levelton Engineering Ltd.
150-12791 Clarke Place
Richmond BC, V6V 2H9
Phone: (604) 207-5123
Fax: (604) 278-1042
Email: <mailto:NCHRP6-16@levelton.com>

Sincerely

LEVELTON ENGINEERING LTD.

Brent T. Mussato
Principal Investigator
NCHRP Project 6-16

Please complete the survey questions in the spaces provided. In most cases, "yes" or "no" answers or numerical rankings are sufficient, however some fields required text entries. If required, additional space is provided in a comments section in PART 7. The survey is organized as follows:

- PART 1 - AGENCY INFORMATION**
- PART 2 - AGENCY PRACTICES**
- PART 3 - ENVIRONMENTAL IMPACT DATA**
- PART 4 - CORROSION IMPACT DATA**
- PART 5 - PRODUCT SELECTION PROCESS**
- PART 6 - OTHER INFORMATION**
- PART 7 - MANUFACTURER AND VENDOR DATA**

Completed Surveys can be returned via email or fax to:

Brent T. Mussato
 Levelton Engineering Ltd
 150-12791 Clarke Place
 Richmond BC, V6V 2H9

Phone: (604) 207-5123
Fax: (604) 278-1042
Email: nchrp616@levelton.com

PART 1 - AGENCY INFORMATION

| 1.1 - Organization Information: | |
|--|--|
| Name | |
| Agency/Company | |
| Title | |
| Street Address | |
| City | |
| State or Province | |
| Zip or Postal Code | |
| Country | |
| Phone | |
| Fax | |
| Email | |

| 1.2 - Which describes your organization: | Y/N | Please Complete: |
|---|------------|-------------------------|
| <i>User</i> of Snow and Ice Control Materials | | <i>Parts 1 to 6</i> |
| <i>Producer or Vendor</i> of Snow and Ice Control Materials | | <i>Part 7</i> |

| 1.3 - Would it be acceptable if a research team member contacts you to clarify answers or request additional information? | Y/N |
|--|------------|
| | Y |

Figure A-1 – Agency Survey: Part 1 Agency Information

PART 2- AGENCY PRACTICES

| | | |
|---|--|-------------------|
| 2.1 - Specify the size of your maintenance area: | | Lane Miles |
| | | Lane km |

Should the following table not address your practices, or should you wish to include additional information, please use the comments section below (Table 2.4).

| 2.2 - Materials Used | Brand and Vendor | Corrosion Inhibitor (Y/N) | Approx. Annual Tons Used | Rank* |
|---|-------------------------|----------------------------------|---------------------------------|--------------|
| Sand | | | | |
| Salt (NaCl), Solid | | | | |
| Salt (NaCl), Brine | | | | |
| CMA | | | | |
| Calcium Chloride (CaCl ₂) | | | | |
| Magnesium Chloride (MgCl ₂) | | | | |
| Potassium Acetate (KA) | | | | |
| OTHER (specify): | | | | |
| | | | | |
| OTHER (specify): | | | | |
| | | | | |

*Rank utilized products according to preferred usage: "1" = primary, "2" = secondary, etc.

| 2.3 - Product Storage Details - complete using "Y" or "N" answers. | | | | | |
|---|--------------------------|------------------------|---------------|------------------------|-----------------------|
| Material Type | Outdoor Uncovered | Outdoor Covered | Indoor | Impermeable Pad | Runoff Control |
| Abrasives | | | | | |
| Solid Chemicals | | | | | |
| Liquid Chemicals | | | | | |

| 2.4 - Comments on Snow and Ice Control Practices: |
|--|
| |

Figure A-2 – Agency Survey: Part 2 Agency Practices

PART 3 - ENVIRONMENTAL IMPACT DATA

| 3.1-ENVIRONMENTAL CONCERN | Assign % Weight of Importance | Are application efforts modified for these areas (Y/N) | Are studies in progress or being developed? (Y/N) | If adverse impacts have occurred, specify impact and materials |
|----------------------------------|--------------------------------------|---|--|---|
| Aquatic Impacts | 0 | | | |
| Air Quality | 0 | | | |
| Endangered Species | 0 | | | |
| Vegetation | 0 | | | |
| Other (specify): | 0 | | | |
| Other (specify): | 0 | | | |
| Total % (max. = 100) | 0 | | | |

| 3.2 - What environment regulations govern snow and ice control material usage for your agency? | Region (Y/N) | | Act/Regulation (specify) |
|---|---------------------|--|---------------------------------|
| | Federal | | |
| | State/Provincial | | |
| | Other: | | |

PART 4 - CORROSION IMPACT DATA

| 4.1 - CORROSION CONCERN | Assign % Weight of Importance | Are application efforts modified for these areas (Y/N) | Are studies in progress or being developed? (Y/N) | If adverse impacts have occurred, specify impact and materials |
|---|--------------------------------------|---|--|---|
| Vehicles | 0 | | | |
| Structural Steel | 0 | | | |
| Roadside Structures, Utilities, Equipment | 0 | | | |
| Concrete Damage | 0 | | | |
| Concrete Reinforcing | 0 | | | |
| Other (specify): | 0 | | | |
| Total % (max. = 100) | 0 | | | |

Figure A-3 – Agency Survey: Part 3 Environmental Impact Data and Part 4 Corrosion Impact Data

PART 5 - PRODUCT SELECTION PROCESS

| 5.1 - Weight the following concerns based on your agency's current and proposed (future) <i>Product Selection Process</i> : | % Weight of Importance | |
|---|------------------------|----------|
| | Current | Proposed |
| Environmental | | |
| Corrosion | | |
| Human Exposure | | |
| Purchase Price | | |
| Cost of Use (i.e. capital, operational) | | |
| Storage and Handling | | |
| General Performance/Ease of Use | | |
| Climatic Requirements | | |
| Tradition | | |
| Other (specify): | | |
| Total % (max. = 100) | 0 | 0 |

| 5.2 - Are specifications in place for use or purchase of Snow and Ice Control Materials? | | | | |
|--|--------|------|-----|-----------------|
| Product Type | AASHTO | ASTM | PNS | Other (specify) |
| Abrasives | | | | |
| Solid Chemicals | | | | |
| Liquid Chemicals | | | | |

| 5.3 - Is Quality Testing conducted on received products? | Y/N | % of Loads Tested | Protocol (Y/N) | | |
|--|-----|-------------------|----------------|------|-----------------|
| | | | PNS | SHRP | Other (specify) |
| | | | | | |

PART 6 - OTHER INFORMATION

| | |
|--|-----|
| 6.1 - Have complaints been made relating use of snow and ice control chemicals to impacts on Power Distribution Lines ? | Y/N |
| | |

| | |
|---|-----|
| 6.2 -Have complaints been made relating use of snow and ice control chemicals to impacts on Railroad Signaling ? | Y/N |
| | |

| |
|-----------------------------------|
| 6.3 - Additional comments: |
| |

Figure A-4 – Agency Survey: Part 5 Product Selection Process and Part 6 Other Information

PART 7 - MANUFACTURER AND VENDOR DATA

| 7.1 - Which of the following represents your organization? | Y/N |
|---|------------|
| Primary producer of base materials | |
| Primary producer of additive materials | |
| Value added blender and/or vendor | |
| Vendor only | |

| 7.2 - Provide details on the products manufactured and/or sold: | | | | | |
|--|--------------------------------|----------|---|----------|-------------------------|
| Product Name | Base Chemical (specify) | % | Corrosion Inhibitor (specify or N/A) | % | Annual Tons Sold |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

| 7.3 - Would you provide product for further study? | Y/N |
|---|------------|
| | |

NOTE: Study requirements by the NCHRP prevent disclosure in of product names, proprietary information or other information in the final study report unless otherwise agreed

Figure A-5 – Agency Survey: Part 7 Manufacturer and Vendor Data

APPENDIX B
AGENCY SURVEY RESPONSE SUMMARY

Table B-1 – Survey Response: Maintenance Areas and Annual Usage

| Agency | Maintenance Area | | Annual Usage (tons solid per year) | | | | | | | | | | | |
|-----------|------------------|---------|------------------------------------|------------|------------|-------|-------|-------|----|----------------------|-----|--------|--|-------|
| | Lane mile | Lane km | SAND | Solid NaCl | NaCl brine | CMA | CaCl2 | MgCl2 | KA | Proprietary Products | | | | |
| AZ | 26,000 | 45,942 | 50,000 | | | 50 | | 700 | | 10000 | | | | |
| AR | 35,000 | 61,845 | | 4000 | | | 2000 | 1200 | | | | | | |
| CO | 22,800 | 40,288 | 4,908 | 1063 | | 21618 | | 43667 | | | | 262606 | | 13247 |
| CT | 5,687 | 10,049 | 286,090 | 130513 | | | | | | | | | | |
| Edmonton | 3,962 | 7,000 | 92,400 | 17600 | | | 43 | | | | | | | |
| ID | 12,000 | 21,204 | 526,000 | 162000 | | | 167 | 12300 | | | | | | |
| Kelowna | 569 | 1,006 | | | | | | | | | | | | |
| KY | 61,694 | 109,013 | | 250000 | | | 5470 | | | | | | | |
| MS | 2,073 | 3,663 | | 1500 | | | | | | | | | | |
| MO | 77,000 | 136,059 | | 225000 | | | 1270 | | | | | | | |
| MT | 25,000 | 44,175 | 500,000 | 25000 | | | 1000 | 20000 | | 5000 | | | | |
| NH | 631 | 1,115 | | 19200 | | | 16 | | | | | | | |
| OH | 49,000 | 86,583 | 113,000 | 720000 | 48714 | | 8350 | | | | 270 | | | |
| ONT | 28,000 | 44,800 | 632,500 | 550000 | 3894 | | 3575 | 3520 | | | | | | |
| Pr George | 1,019 | 1,800 | 30,000 | 3300 | | | 145 | 141 | | | | | | |
| SAS | 14,714 | 26,000 | 40,588 | 56944 | 95 | | 9 | 9 | | | | | | |
| SD | 17,947 | 31,712 | 115,000 | 35000 | | | 150 | 2608 | | | | | | |
| TN | 35,778 | 63,220 | | 40000 | 4920 | 50 | 434 | | | | | | | |
| TX | 187,000 | 330,429 | 5,800 | 14736 | | 99 | | 3580 | | | | | | 407 |
| UT | 15,962 | 28,205 | 33,000 | 210000 | 1000 | | | 75 | 2 | | | | | |
| VA | 122,930 | 217,217 | 57,400 | 137600 | | | 21750 | 2486 | | | | | | |
| IN | 11,216 | 19,819 | | 590000 | 4100 | | 1950 | 800 | | | 790 | | | |
| WI | 30,975 | 54,733 | 20,000 | 400000 | 1970 | | 705 | 855 | | | 110 | | | |
| ND | 16,800 | 29,686 | 80,000 | 20000 | 985 | | | | 54 | | | | | |
| NY | 43,000 | 75,981 | 101,000 | 750000 | 281 | | 45 | 290 | | | 325 | | | |
| KS | 23,814 | 42,079 | 102,825 | 80599 | | | | 55493 | | | | | | |
| ALB | 36,220 | 64,000 | 465,000 | 150000 | 460 | | 600 | 2000 | | | | | | |
| MN | 30,094 | 53,176 | 80,561 | 106478 | 6000 | | | | | | | | | |



Table B-2 – Survey Response: Materials Preference

| Agency | Material | | | | | | | | | |
|-----------|----------|------------|------------|-----|-------|-------|----|----------------------|---|---|
| | SAND | Solid NaCl | NaCl brine | CMA | CaCl2 | MgCl2 | KA | Proprietary Products | | |
| AZ | 2 | | | 4 | | 3 | | 1 | | |
| AR | | | | | | | | | | |
| CO | 2 | 2 | | 2 | | 1 | | | 1 | 2 |
| CT | | | | | | | | | | |
| Edmonton | 1 | 2 | | | 3 | | | | | |
| ID | 4 | 3 | | | 2 | 1 | | | | |
| Kelowna | 4 | 1 | 2 | | | 3 | | | | |
| KY | | 1 | 2 | | 3 | | | | | |
| MS | | | | | | | | | | |
| MO | | 1 | 2 | | 3 | | | | | |
| MT | 1 | | | | 1 | 1 | | 2 | | |
| NH | | 1 | | | 2 | | | | | |
| OH | 5 | 1 | 3 | | 2 | | | 5 | | |
| ONT | 2 | 1 | 1 | | 1 | 1 | | | | |
| Pr George | | | | | | | | | | |
| SAS | 2 | 1 | 3 | | | | | | | |
| SD | 1 | 2 | | | 4 | 3 | | | | |
| TN | | 1 | 2 | 4 | 3 | | | | | |
| TX | 1 | 2 | | | | 3 | | | | |
| UT | 4 | 1 | 2 | | | 5 | 6 | | | |
| VA | 3 | 1 | | | 4 | 2 | | | | |
| IN | 5 | 1 | 2 | | 3 | 3 | | 4 | | |
| WI | 6 | 1 | 2 | | 4 | 3 | | 5 | | |
| ND | 1 | 1 | 1 | | | | 1 | | | |
| NY | 3 | 1 | 2 | | 2 | 2 | 2 | | | |
| KS | | 1 | 2 | | | 3 | | | | |
| ALB | 1 | 2 | 5 | | 4 | 3 | | | | |
| MN | 2 | 1 | 1 | | 2 | 2 | 2 | | | |

Table B-3 – Survey Response: Environmental Impacts

| Agency | Storage | | | | | | | | | | | | | | Environmental Data | | | | | | | | | | | | | | | | | | |
|-----------|-----------|-------|----|-----|----|------------|-------|----|-----|----|-------------|-------|----|-----|--------------------|---------|-----|----|-----|-----|------------------|-----|----|-----|-----|---------|-----|----|-----|-----|------|-------|------|
| | Abrasives | | | | | Solid Chem | | | | | Liquid Chem | | | | | Concern | | | | | Modified efforts | | | | | Studies | | | | | Regs | | |
| | Out U | Out C | In | Pad | RO | Out U | Out C | In | Pad | RO | Out U | Out C | In | Pad | RO | H2O | AIR | ES | Veg | oth | H2O | AIR | ES | Veg | oth | H2O | AIR | ES | Veg | oth | Fed | St/PR | Othr |
| AZ | y | | | | | | | y | y | y | | | | | 25 | 25 | 25 | 25 | | y | y | y | y | | y | y | y | y | | | | | |
| AR | y | | | | | | y | y | | | | | y | y | | | | | | | | | | | | | | | | | | | |
| CO | y | | y | y | y | | | y | | | | | | | 25 | 50 | | 25 | | | y | | y | | y | y | | | | | | | |
| CT | y | | y | y | y | | | y | y | y | | | | | 75 | 5 | 5 | 20 | | y | | | | | | | | y | | | | | |
| Edmonton | y | | | | | | | y | | | | | y | y | | | | | | | | | | | y | y | | | y | y | | | |
| ID | y | y | | | | y | y | y | | | | s | s | | 25 | 25 | 25 | 25 | | | y | | | | | | | | y | | | | |
| Kelowna | y | | | | | | | y | y | | | y | y | | 30 | 30 | 20 | 5 | 15 | y | y | | | y | | | | | | | | | |
| KY | y | y | | | y | | | y | y | y | y | | y | y | | | | | | | | | | | | | | | y | y | | | |
| MS | y | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| MO | y | | | | | | y | y | y | y | | | y | y | 25 | 25 | 25 | 25 | | | | | | | | | | | | | | | |
| MT | y | y | | | | | y | | | | | s | | | 20 | 60 | 10 | 10 | | y | y | y | y | | y | y | y | y | y | y | | | |
| NH | | | | | | | | y | | | | | y | | | | | | | | | | | | | | | | y | y | | | |
| OH | | y | | | | | | y | y | | | | y | | | | | | | | | | | | | | | | | | | | |
| ONT | | | y | | | | | y | y | | | | | | 25 | 25 | | 50 | | | | | | y | y | y | y | | | | | | |
| Pr George | y | | | | | | y | | | y | | y | y | | 20 | 80 | | | | y | y | | | y | | | | | | | | | |
| SAS | y | | | | | | y | | y | | | | | | 33 | | 33 | 33 | | y | | y | y | | y | y | y | y | | | y | | |
| SD | y | y | | | | y | y | y | | y | | | | | | 100 | | | | | y | | | | y | | | | y | | | | |
| TN | | | | | | | | | | | | | | | 90 | | | 10 | | | | | | | | | | | | | | | |
| TX | | | | | | | | y | | | | | | | 25 | 25 | 25 | 25 | | y | y | y | y | | | | | y | y | y | | | |
| UT | y | | y | y | y | y | | y | y | y | | y | y | | 40 | 30 | | 30 | | y | y | | | y | | | | y | y | | | | |
| VA | | y | y | y | y | | y | y | y | y | | | | | 55 | 5 | 30 | 10 | | y | | | y | | | | | | | | | | |
| IN | y | | | | | | | y | y | y | | | y | y | 40 | 20 | 10 | 30 | | | | | | y | | | | | | | | | |
| WI | y | | y | y | y | | | y | y | y | | | y | y | 70 | 10 | | 20 | | | | | | y | | | y | | | | | | |
| ND | y | | | | | | | y | | y | | | | | 40 | 10 | 25 | 25 | | y | | y | | | | | | | | | | | |
| NY | | y | y | y | y | | | y | y | y | | | y | y | 66 | 4 | 15 | 15 | | y | | | | y | | | y | | | | | | |
| KS | | y | | | | | y | y | y | y | | | y | y | | | | | | | | | | | | | | | | | | | |
| ALB | y | | y | y | y | | | y | y | y | | | | | 60 | 10 | 5 | 25 | | y | y | | y | | | | | y | y | | | | |
| MN | | y | | | | | | | | | | | | | | | | | | y | | | | | y | | | | y | y | | | |



Table B-4 – Survey Response: Corrosion Impacts Part One

| Agency | Inhibitor? | | | | | | | | | | | Concern | | | | | Modified efforts | | | | | Studies | | | | | Other | | | |
|-----------|-------------|------------|------------|-----|------|------|----|----------------------|---|---|--|---------|----|----|----|----|------------------|-----|----|----|----|---------|-----|-----|----|----|-------|----|-----|------|
| | SAND US Ton | Solid NaCl | NaCl brine | CMA | CaCl | MgCl | KA | Proprietary Products | | | | Veh | SS | RS | CD | CR | Oth | Veh | SS | RS | CD | CR | Oth | Veh | SS | RS | CD | CR | Oth | Rail |
| AZ | | n | n | | y | y | n | | | | | | | | | | | | | | | | | | | | | | | |
| AR | | n | | | y | y | | | | | | | | | | | | | | | | | | | | | | | | |
| CO | | | | | | | | | | | | 20 | 20 | 20 | 20 | 20 | | | | | | | | y | y | | | | y | y |
| CT | | n | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Edmonton | | | | | | | | | | | | | 30 | 40 | | 30 | | y | y | | | y | | | | | | | | |
| ID | | | | | y | y | | | | | | 25 | 25 | 23 | 2 | 25 | | y | y | | | | | y | | | y | | | |
| Kelowna | | n | | | | y | | | | | | 20 | 20 | 20 | 20 | 20 | | y | y | y | y | y | | | | | | | | |
| KY | | n | n | | n | | | | | | | 20 | 20 | 20 | 20 | 20 | | | | | | | | | | | | | | |
| MS | | | | | | | | | | | | 10 | 10 | 10 | 35 | 35 | | | | | | | | | | | | | | |
| MO | | n | n | | n | | | | | | | | | | | | | | | | | | | | | | | | | y |
| MT | | | | | y | y | y | | | | | 60 | | | 20 | 20 | | y | | | y | y | | y | | | y | | y | y |
| NH | | y | | | y | | | | | | | | | | | | | | | | | | | | | | | | | |
| OH | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ONT | | | y | | y | y | | | | | | 30 | 30 | 30 | 10 | | | | | | | | | y | y | y | y | y | | y |
| Pr George | | | | | y | y | | | | | | | | | | | | | | | | | | | | | | | | |
| SAS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SD | | | | | | | | | | | | 30 | 40 | | 20 | 10 | | y | y | | y | | | | | y | | | | y |
| TN | | | | | | | | | | | | 30 | 10 | | 40 | 20 | | y | y | | y | y | | | | | | | | |
| TX | | | | | | y | | | | y | | 20 | 20 | 20 | 20 | 20 | | y | y | y | y | y | | | | | | | | |
| UT | | | | | | y | y | | | | | | | | 50 | 50 | | | | | | | | | | | y | y | | |
| VA | | | | | | | | | | | | | | | 5 | 95 | | | | | | | | | | | y | y | | |
| IN | | | | | | y | y | | y | | | 30 | 10 | 5 | 5 | 50 | | | | | | | | | | | | | | |
| WI | | | | | | y | | | y | | | 50 | 10 | 10 | 10 | 20 | | | | | | | | | | | | | | |
| ND | | | | | | | y | | | | | 30 | 20 | 10 | 20 | 20 | | y | y | | y | y | | | | | | | | |
| NY | | y | y | | y | y | | | y | | | | | | 50 | 50 | | | | | | | | | | | y | y | | |
| KS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ALB | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| MN | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |



Table B-5 – Survey Response: Corrosion Impacts Part Two

| Agency | Purchase Criteria Current | | | | | | | | | | Purchase Criteria Proposed | | | | | | |
|-----------|---------------------------|------|-----|-----|-----|-------|------|------|------|-----|----------------------------|------|-------|-----|-----|-------|------|
| | Env | Corr | Exp | PP | COU | S & H | Perf | Clim | Trad | Oth | env | Corr | H exp | PP | COU | S & H | Perf |
| AZ | 20 | | | 20 | 20 | 20 | 20 | 20 | | | 20 | | | 20 | | 20 | 20 |
| AR | | 25 | | 25 | 10 | 15 | 25 | | | | | 25 | | 25 | 10 | 15 | 25 |
| CO | 20 | 20 | | 20 | | 20 | | 20 | | | 20 | 20 | | 20 | | 20 | |
| CT | 20 | 10 | | 15 | 20 | 5 | 15 | | 15 | | 20 | 10 | | 15 | 20 | 5 | 15 |
| Edmonton | 20 | | | 20 | | | 30 | 30 | | | 30 | | | 20 | | | 20 |
| ID | 10 | 10 | 5 | 50 | 5 | 5 | 5 | 5 | 5 | | 10 | 10 | 5 | 50 | 5 | 5 | 5 |
| Kelowna | 10 | 10 | 10 | 25 | 15 | 10 | 10 | 10 | | | 10 | 10 | 10 | 25 | 15 | 10 | 10 |
| KY | | | | 90 | | 5 | 5 | | | | | | | 90 | | 5 | 5 |
| MS | | 10 | | 60 | | | 30 | | | | | 10 | | 60 | | | 30 |
| MO | 10 | 10 | 5 | 30 | 15 | 15 | 15 | | | | 15 | 20 | 5 | 20 | 10 | 15 | 15 |
| MT | 20 | 20 | 20 | 10 | 5 | 5 | 5 | 5 | | 10 | 20 | 20 | 20 | 10 | 5 | 5 | 5 |
| NH | | | | 40 | 20 | 10 | | 30 | | | | | | 40 | 20 | 10 | |
| OH | | | | | | | | | | | | | | | | | |
| ONT | 1 | 5 | 2 | 20 | 2 | | 45 | 25 | | | 1 | 5 | 2 | 20 | 2 | | 45 |
| Pr George | | | | 100 | | | | | | | | | | | | | |
| SAS | | | 5 | 80 | | | | 5 | 10 | | 5 | | 10 | 50 | | | |
| SD | 5 | 15 | 10 | 15 | 20 | 15 | 10 | 10 | | | 5 | 20 | 10 | 15 | 20 | 10 | 10 |
| TN | 5 | 20 | | 20 | | | 30 | 20 | 5 | | 10 | 20 | | 20 | | | 30 |
| TX | 15 | 15 | 10 | 15 | 12 | 6 | 15 | 12 | | | 15 | 15 | 10 | 15 | 12 | 6 | 15 |
| UT | | | | 40 | | 10 | 30 | 10 | 10 | | 20 | 10 | | 30 | | 10 | 20 |
| VA | 5 | 5 | 5 | 50 | 5 | 5 | 20 | 5 | | | 5 | 5 | 5 | 50 | 5 | 5 | 20 |
| IN | 5 | 5 | 5 | 60 | 10 | 5 | 5 | 5 | | | 5 | 5 | 5 | 60 | 10 | 5 | 5 |
| WI | | | | 100 | | | | | | | | | | 100 | | | |
| ND | 10 | 20 | 10 | 10 | 10 | 10 | 20 | 10 | | | 10 | 20 | 10 | 10 | 10 | 10 | 20 |
| NY | | | | | | | | | | | | | | | | | |
| KS | | 10 | | 30 | | 20 | 10 | 25 | 5 | | | 10 | | 30 | | 20 | 10 |
| ALB | 5 | | | 50 | 20 | 20 | 10 | 10 | 5 | | 10 | | | 50 | 20 | 10 | 10 |
| MN | 10 | 10 | 5 | 10 | 5 | 10 | 25 | 25 | | | | | | | | | |
| AVERAGE | 11 | 13 | 8 | 39 | 12 | 11 | 18 | 15 | 8 | 10 | 13 | 14 | 8 | 35 | 12 | 10 | 17 |
| COUNT | 17 | 17 | 12 | 26 | 15 | 19 | 21 | 19 | 7 | 1 | 18 | 17 | 11 | 24 | 14 | 18 | 20 |

