

TCMA Chloride Project
TAC meeting #1
September 8, 2010 1-3pm
MPCA Board Room West

Agenda

- Introductions – team
- Overview of the Project – Brooke Asleson & Barb Peichel
 - Review feasibility study results (phase I)
 - Vision/Goals of the project (phase II)
 - Stakeholder process
 - Project website
- Role of the TAC in project – Brooke Asleson
- Timeline & Funding of project – Brooke Asleson
- Monitoring Plan – Mike Walerak
- Work Plan review/discussion – team
- Next meeting (Dec./Jan.)

TCMA Chloride Project

TAC Meeting #1

Attendees: Brooke Asleson, Barb Peichel, Jennifer Anthony, John Erdmann, Kelly O'Hara, Bob Fossum, Kevin Bigalke, Steve Albrect, Cliff Aichinger, Mark Fishbach, Barb Lioda, Wesley Saunders-Pearce, Tom Struve, Melissa Bokman, Kari Oquist, Pat Byrne

September 8, 2010, 1-3pm, MPCA Board Room West

The group went around and gave introductions including their experience related to chloride/road salt. Some of the intro comments were: Tom said they are making brine for Hennepin County and other cities and retrofitting their fleet. Steve said they have reduced their road salt usage by 35% even though they increased the roads they maintain in the winter.

Overview of the project

1. Review feasibility study results (phase I)

- Meeting attendee comments/concerns:
 - Concerns over using application rates versus purchasing records. Until we have better data on actual application rates, purchasing records will be the default (see "road salt application rates" diagram). Ideally we would like to have accurate application rates. Will work in phase II on data collection.
 - There are a lot of private applicators and it is tough to collect actual application rates from them.
 - Cities vary on how precise their records are on application rates so we should be thoughtful about how to obtain/quantify that type of information.
 - We should also try to use square feet for roads in the future because if we just use lane miles or linear miles, that doesn't account for the very different width of roads (9 to 16 feet).
 - Who is doing lake chloride and conductivity profiles in the Metro?
 - Since we do not have the funding for the research needs, local partners should consider putting a proposal together for the LRRB (Local Road Research Board) and the APWA (American Public Works Association).

- #### **2. Vision/goals of the project (phase II):** Inter-agency team met last March. Talked about results of the study and how we move forward into phase II. A workplan was created. A holistic chloride plan for the 7 county metro area, for ALL waters (inclusive list), not just wait until they are impaired. The vision is to develop goals such as: here is where we are today,

this is what we need to do to maintain WQ, and how to improve those waterbodies that are already impaired. The Plan will address protection and restoration, along with an implementation plan for cities and MS4s to use.

Concern-public expectation of having dry roads. Watersheds and operations will have to work together to help bring about behavior change and expectations. **Response:** the goal is to use this TAC to help bring WDs and WMOs on board to help spread the word about the project and educate the general public. Concern: A lot of cities/entities are willing, but not technically capable to make the changes.

Task 9: Stakeholder process: Very large audience and entities to involve and engage in the project. This approach will coordinate the various stakeholders and their needs. Please refer to the Stakeholder diagram located on our website under "Current Activities". Notice the overlap between several of the teams. Want expertise on the teams to help advise and make educated decisions. Brooke will be giving project updates through speaking at events and conferences in the metro area to inform and educate various groups and the public on this effort. Project website-fact sheet and full feasibility report are available. The website will be used to provide up to date information and details on the project. We will be looking to all of the members of the various teams for this project to help us disseminate information about the project. **Role of the TAC in project:** The TAC is going to be used to define the work plan and the work that needs to be done to meet the goals of the project. Talk about modeling, protection vs restoration, etc. This group will help guide the project. This team will have quarterly meetings.

Timeline and funding of project-MPCA will be collecting data over the next 3 years. Anticipating 2014 for the end date of the project. Funding of \$200,000 available and needs to be spent by June 30, 2013. Once we better know what we need for various tasks, Brooke can request additional funds.

Task 1: Monitoring Plan-A separate plan will be developed for monitoring. Looking at surface and depth chloride monitoring (to use along-side conductivity profiles) of the lakes 3 times during the winter season (early Nov-pre ice, late Jan-drill down through the ice, late March-ice melt). Criteria for choosing the lakes were high road density in the watershed, deep lakes with small surface area, large watershed to lake ratio, some with data suggesting they are impaired, and those with no outlets. Tried to pull in a variety of lakes, and include some of those from Phase I. The first season is a test run to test the monitoring techniques/methods to help us develop the monitoring guidance document. Met Council is also going to monitor 6-8 lakes this winter. Develop protocol for WDs and WMOs to pick up and continue the monitoring.

What will this data collection teach us? The relationship between conductivity and road salt. To build a more robust dataset for the winter months which is when chloride levels are the highest in streams. To further emphasize deep lake samples and further demonstrate that chloride is settling to the bottom of our lakes. There is still some uncertainty that chloride is being retained in our lakes at high concentrations, this data will expand our understanding of how chloride is impacting lake mixing dynamics. We also need to know which lakes are currently exceeding the chloride standard, and prioritize those that are near the standard so that we can prioritize BMP implementation. This data

collection effort will also define the baseline before more development and roads are built in outer Metro areas.

Stream monitoring sites: Monitoring will be conducted at stations where we have existing flow stations that have a good flow record which will primarily be Met Council sites. We (MCES & local partners) will be collecting grab samples during thaw events and will also be exploring how to sample under various ice conditions. For the most part flow will be calculated for the winter months using USGS protocol at locations where freezing conditions make flow measurements impossible.

Work Plan review/discussion: Work plan will be sent out once it is updated, and any final feedback will be solicited.

Task 2: Update existing data compilation with recent data. This task is to update existing data. Take Phase I data and add any chloride or conductivity data that is not routinely added to STORET (we will put a call out for this type of data to local partners). The model to be used is the empirical model developed in Phase I.

Task 3: Categorize & define waterbodies for protection and restoration- This is a separate task to define the different categories of waterbody status in the metro (impaired, not impaired, not assessed/monitored). Note that we do know a few that are impaired, but haven't been added to our 303(d) list yet.

We should either eliminate this task or make sure we really limit the budget for this activity. We use the same equipment for waterbodies that are impaired or not impaired so in the big picture this doesn't really matter.

Question- we need other stakeholders on the TAC? Possibly various teams should be weighing in on the work plan draft. Add IAT to task 3 for review of products. There are five various teams with representatives from all stakeholders that are reviewing and providing feedback to the project team. Additional meetings will also be held or attended with the larger stakeholder group to inform them of the project. We are looking to the representatives on these teams to be bringing information back to the other stakeholders.

Potential Additional Tasks that could be added to the work plan.

Because this project does not have funding to address the research recommendations from Phase I, it was suggested that someone (a local eligible entity) could apply for a 319 research grant to research groundwater and infiltration of chloride.

Prior Lake made the switch to a brine solution because it was an economic benefit to reduce road salt use. The benefit to the lakes was secondary. If we build a good pitch (compile economic data) on how reducing road salt use is cost effective, the cities will buy into the process. Add to task 8 or create a separate task for this activity (i.e. economic analysis or cost effectiveness of using less road salt). Could be a task of the work plan to create or review a cost package for cities.

Broad education/outreach effort should be included as a task to educate the general public on why these changes are necessary. Need to message/market the “why” behind this change. Target elected officials as well. Maybe this should be a separate task in the work plan since we really need a large public outreach/media campaign (i.e. people should slow down when there are poor driving conditions or we have to use more road salt and pollute the waters). It could be on the same scale as the statewide phosphorus ban.

Question-Should Department of Public Safety (DPS) be added to one of the teams?

Task 4: Develop target concentrations for non-impaired waters

Task 5: Source identification -comment-we need to improve assumptions from Phase I.

There are a lot of private applicators and it is tough to collect actual application rates from them.

Can we identify other impervious surfaces besides roads such as parking lots that are salted routinely? Create a map similar to the road surface map? Ramsey-Washington WD can provide information on the study they did. RWWD found that most folks only salt the areas where there is pedestrian traffic. There is some work on agricultural chemicals being a potential source of chloride so we should consider this too.

Task 6: Modeling and Analysis -concern that Wasteload Allocations (WLAs) will be assigned to water bodies not actually on the 303d list. MPCA response: Only waters that are impaired will be given WLAs in the project, the rest will be voluntary protection goals. The final report for this project will be very clear as to what is part of a TMDL (restoration) and what is protection and therefore a suggested goal.

Task 7: Write draft & final Restoration (TMDL) and Protection Plan

Comment: It does make sense to conduct this on a watershed-wide basis.

Task 8: Write draft & final Implementation Plan & long-term monitoring plan

It seems that much of the implementation actions could fall under the MS4 permit. Will this be a Metro-wide implementation plan? Yes.

Cities might see this as another unfunded mandate.

It will be important that we know where we should spend the funding first – on protection or restoration activities and in what areas (developing or already developed).**Question:** Are we not conducting any modeling for lakes in this project? How can we do this for lakes and reaches at the watershed scale? We are considering more of a Load Duration Curve (LDC) approach. We want to work more at the watershed/WMO/WD scale or subwatershed scale (except for listed stream reaches and lakes which will be at a smaller scale.) We are still working out the details for addressing lakes in this project

Are there any Mississippi River chloride issues? Dilution is a big factor – and the fact that chloride is transient in rivers and streams. Downstream drinking water may be a factor.

We need to add lakes in this task and flesh out the type of modeling that will be conducted for the lakes – need this information to be much more detailed in the work plan. Don't want to do that intensive of modeling for lakes – could just classify lakes – watershed: lake area – or do an analysis of lakes instead of conducting a lot of modeling. It would be a waste of funding to pay a consultant to do this.

Get comments on the work plan to Brooke by Sept 17th

Mississippi WMO Board would like a presentation about this project. When do you (Brooke) want to talk about this project? Anytime there is a need or opportunity.

We should distribute the factsheet/website to all WMOs and cities in Metro to get the message out. We should wait until the work plan is finalized before doing this more widespread dissemination.

The work plan will take a few months to revise.

Next meeting: TBD (Winter 2011)

TCMA Chloride Project
TAC meeting #2
October 12, 2011 12-2:30pm
Capitol Region WD office

Agenda

- Update on the project (Brooke, MPCA)
- Review of data analysis so far (Hans Holmberg, LimnoTech)
- Discuss source identification process & application rates (Brooke & Hans)
- Discuss the various road salt sources - how to best separate them out
- Various approaches for setting protection goals (Hans Holmberg)
- Stakeholder communications (Brooke)

Twin Cities Metro Area Chloride Management Plan

Development Project Status Report

TAC Meeting
Oct. 12, 2011

Overview

- Project overview
- Chloride criteria
- Trends
- Chloride-conductivity relationships
- Sources
- Targets
- Next steps

Project Overview

**Data
Compilation**

**Categorize
Waters**

**Develop
Targets**

**Source
Identification**

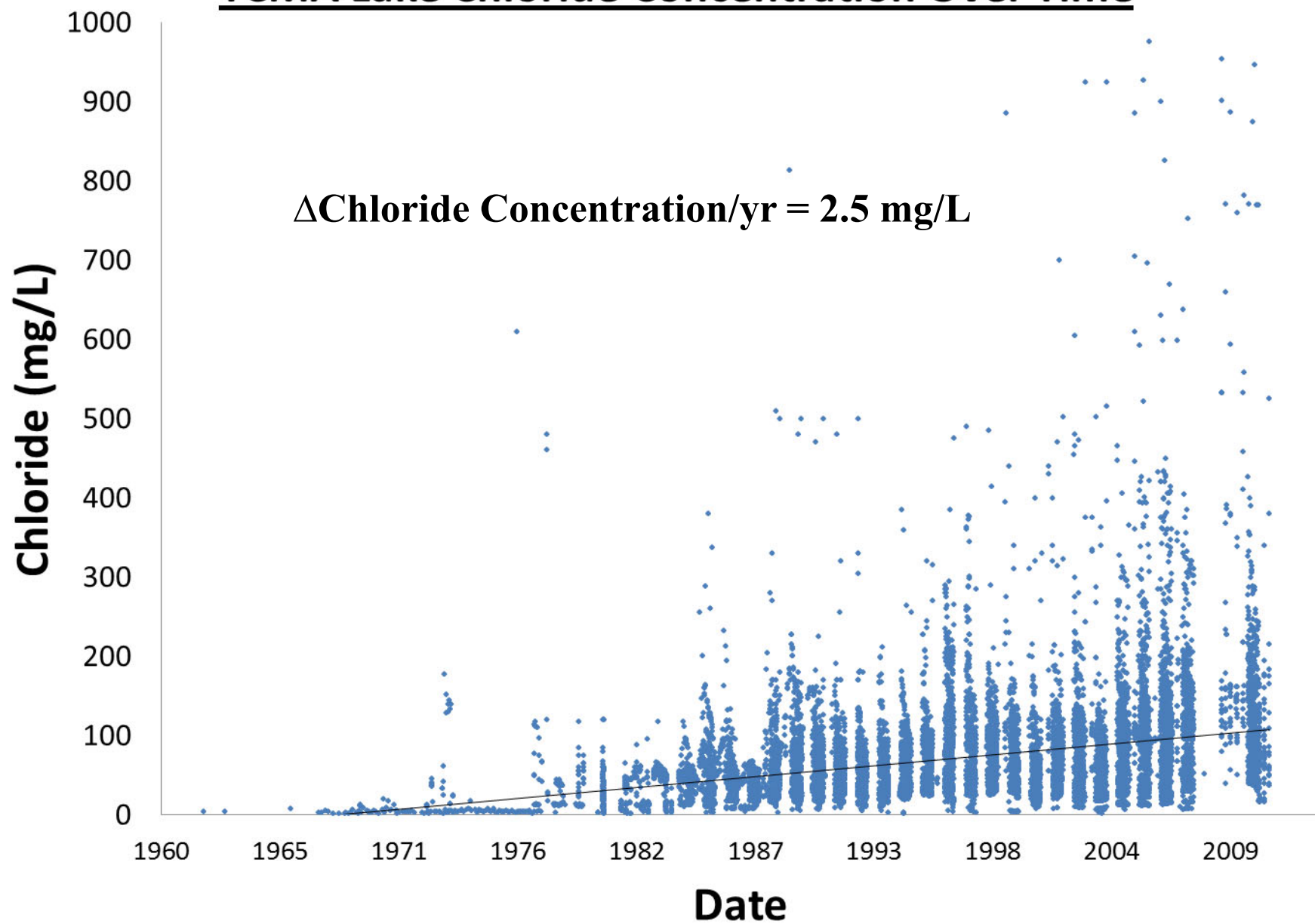
**Modeling and
Analysis**

**Write Management, Implementation,
and Monitoring Plans
Drafts: Oct. 2013; Finals: Nov. 2014**

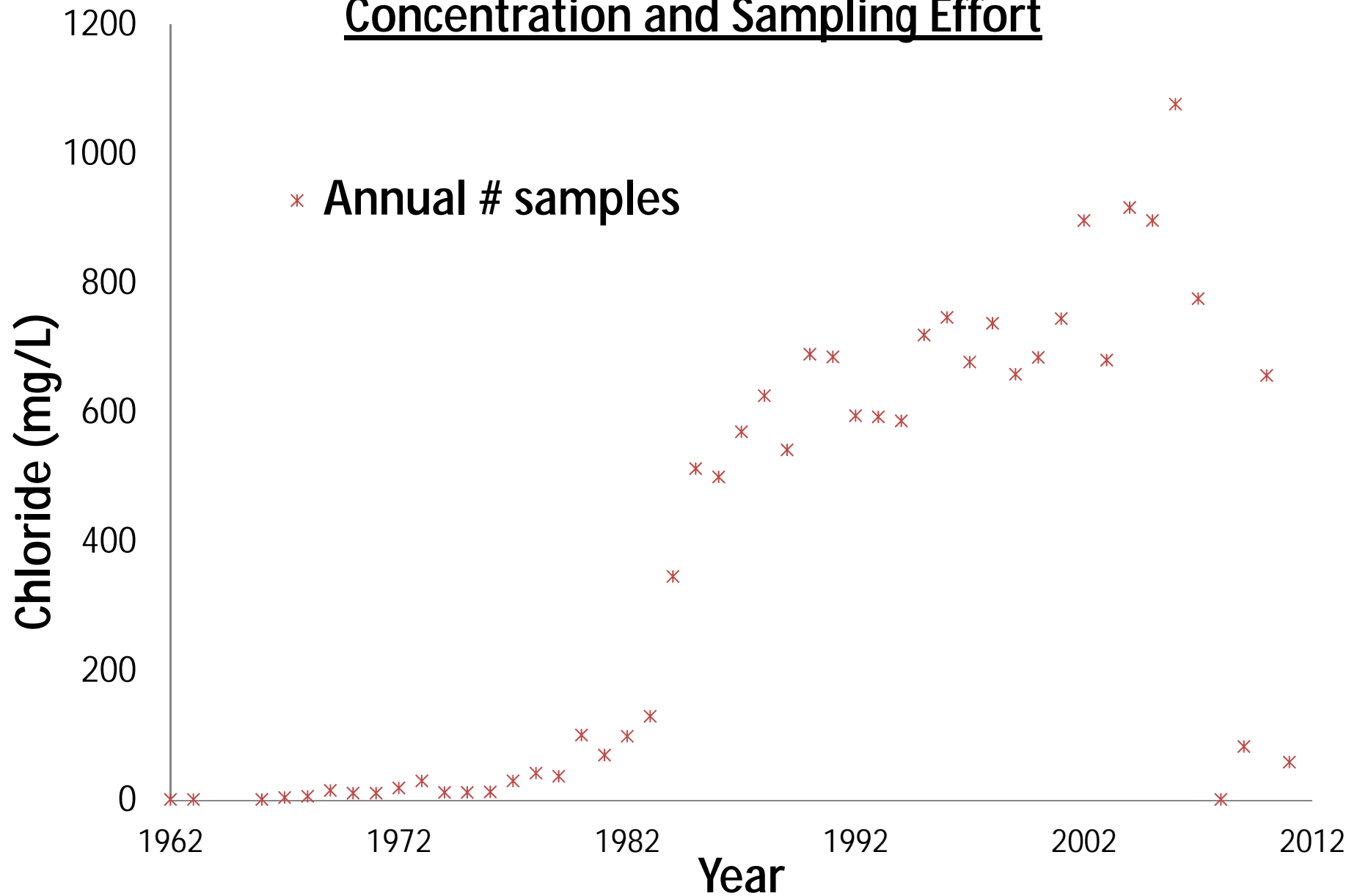
Chloride Criteria

| | Hardness (mg/L as CaCO ₃) | Sulfate (mg/L) | Acute WQC (mg/L) | Chronic WQC (mg/L) |
|-----------------------------|---|-------------------|------------------------|--------------------------|
| Existing Criteria | --- | --- | 860 | 230 |
| Proposed Criteria - Lakes | | | | |
| Average | 121 | 11.2 | 625 | 397 |
| 25th % Hdns/75% Sulfate | 94 | 11.8 | 539 | 342 |
| Proposed Criteria - Streams | | | | |
| Average | 244 | 73 | 573 | 364 |
| 25th % Hdns/75% Sulfate | 180 | 120 | 518 | 329 |

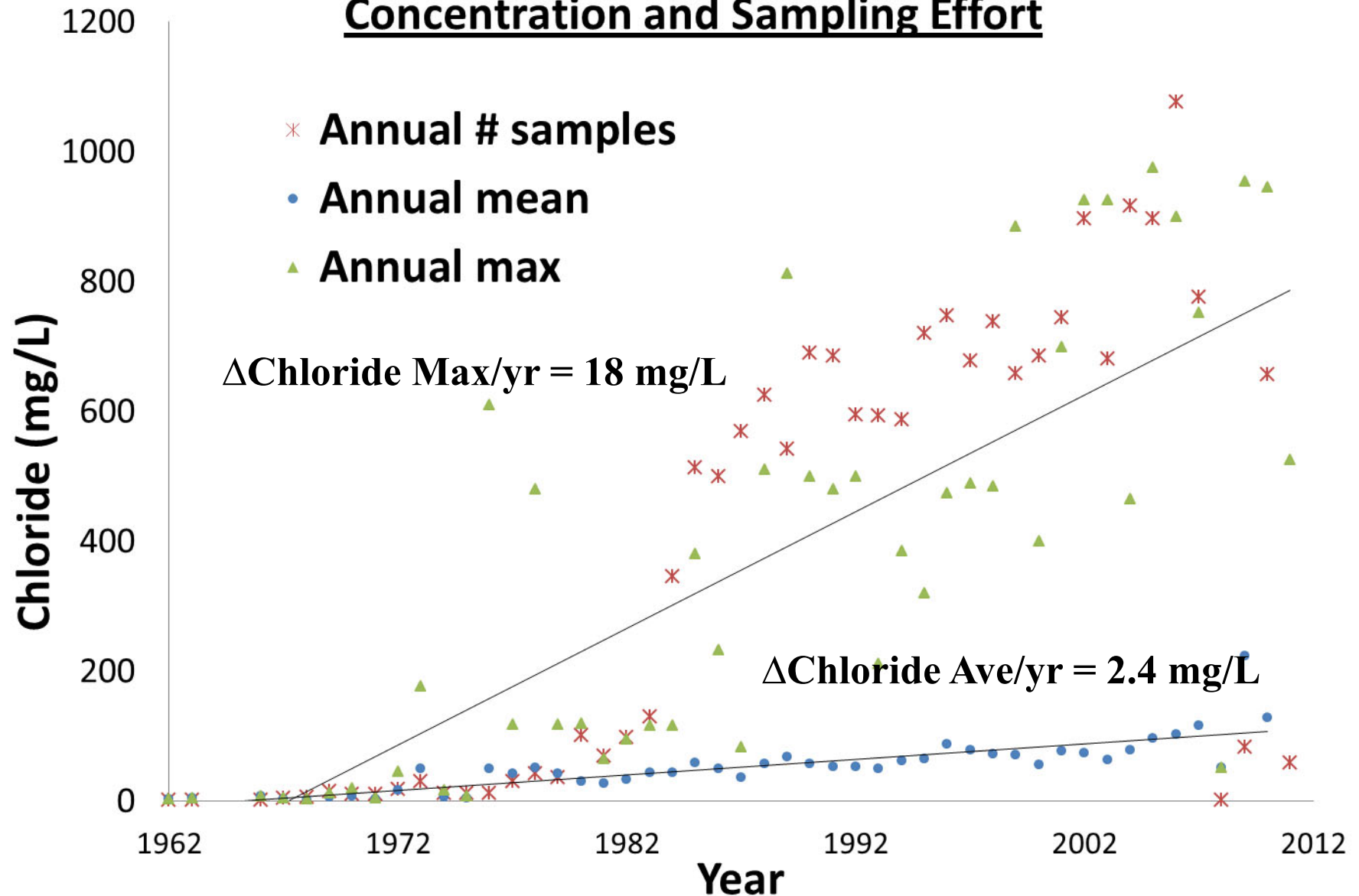
TCMA Lake Chloride Concentration Over Time



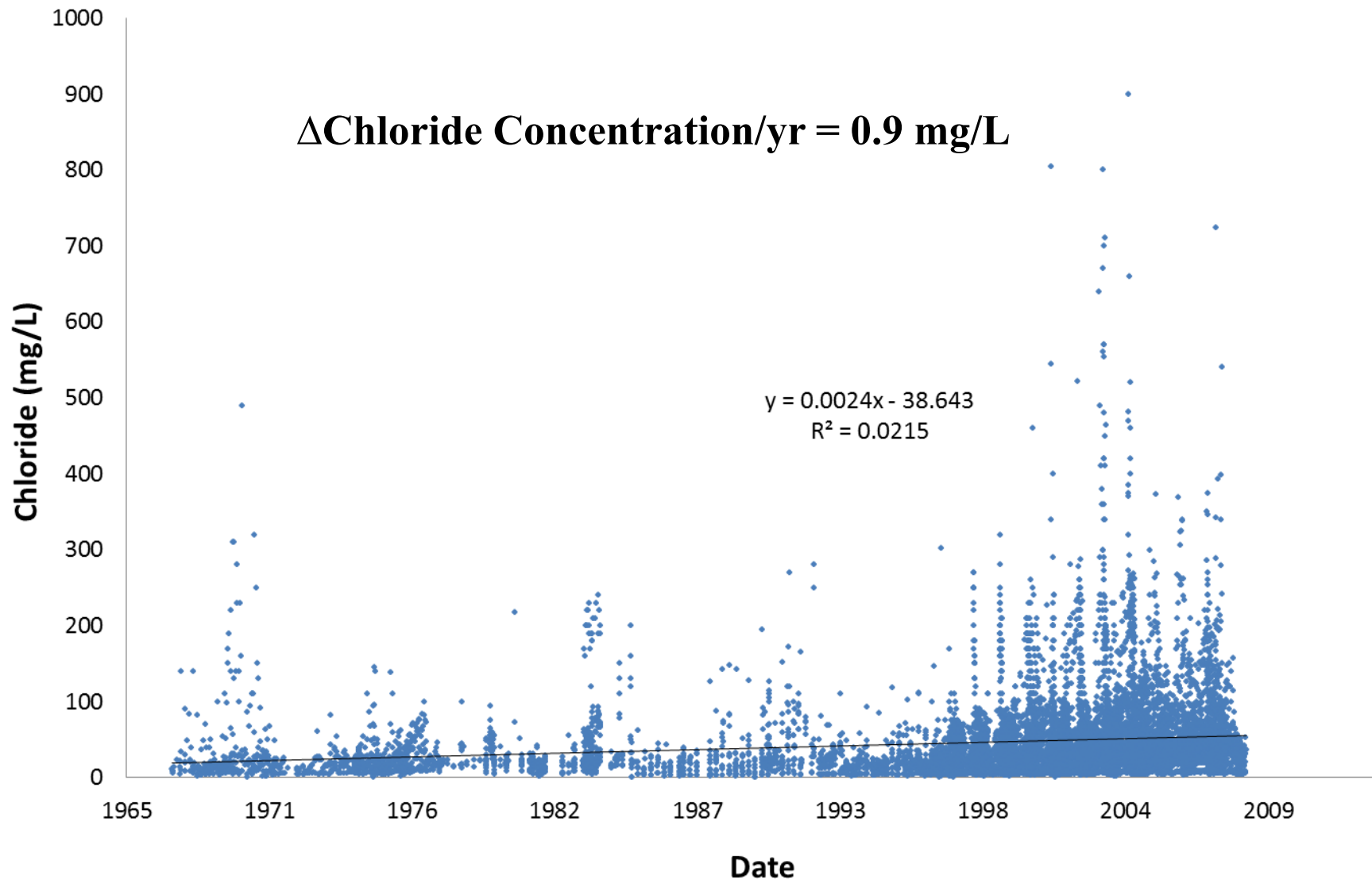
TCMA Mean/ Max Annual Lake Chloride Concentration and Sampling Effort



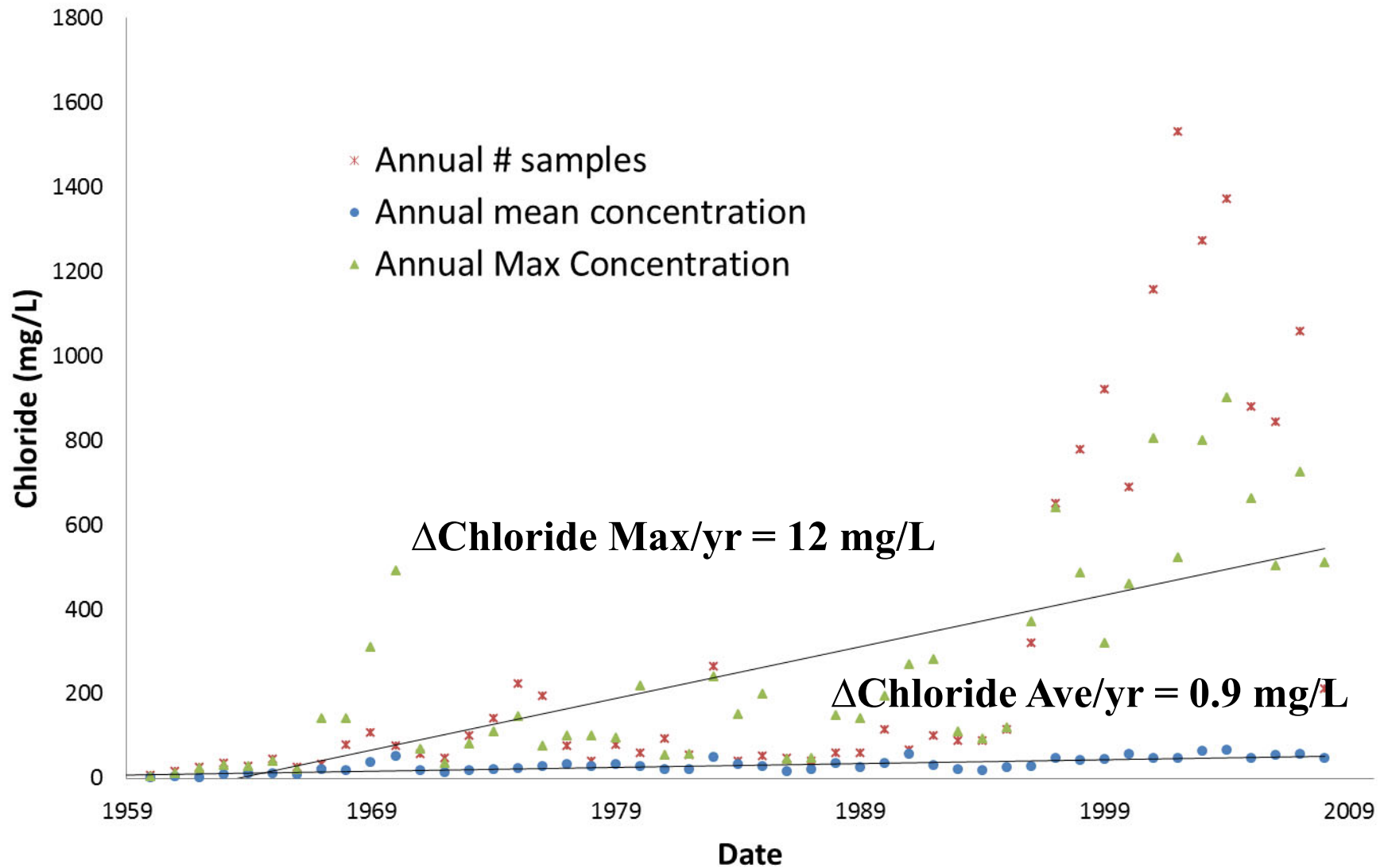
TCMA Mean/ Max Annual Lake Chloride Concentration and Sampling Effort



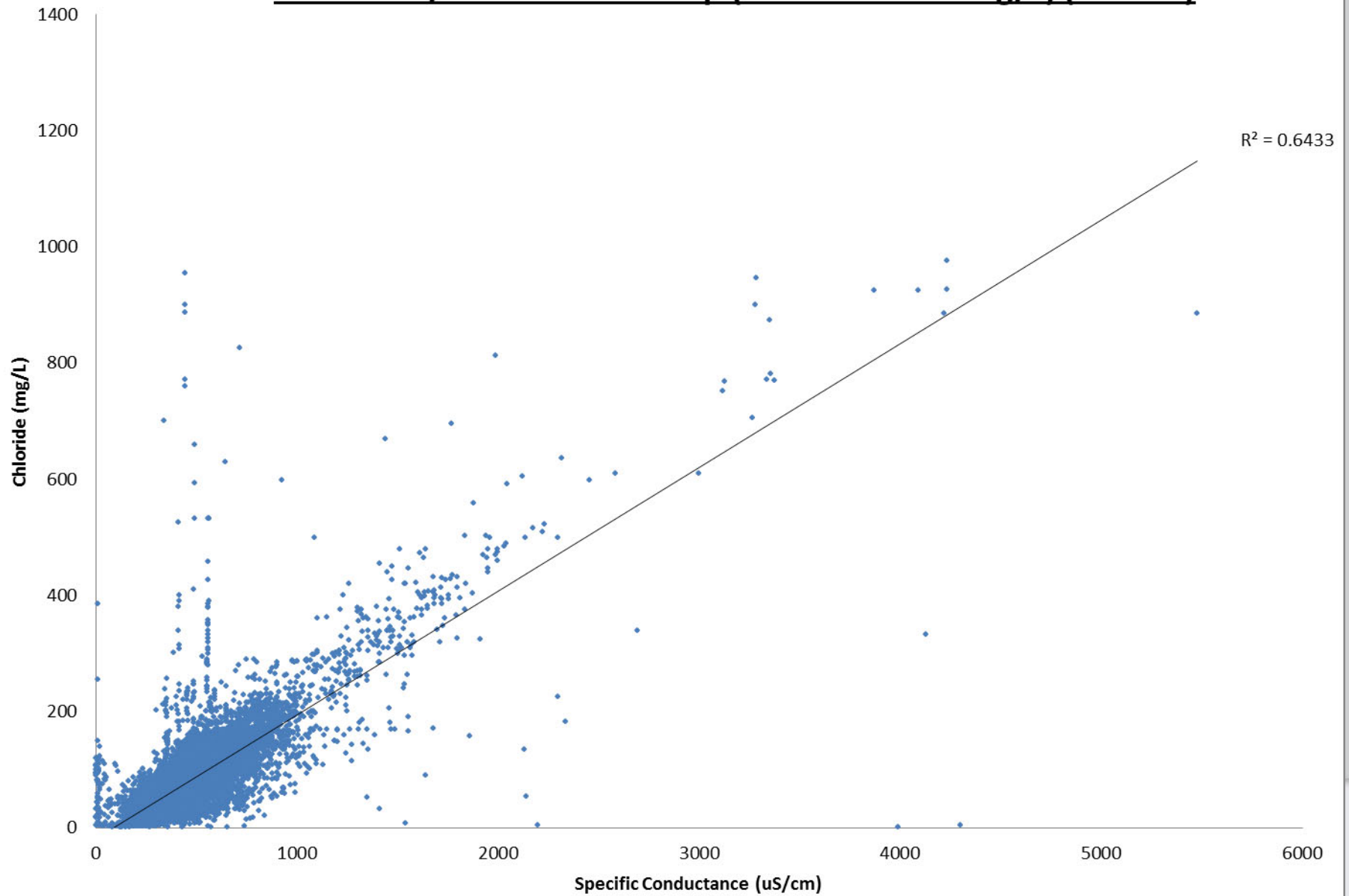
TCMA Stream Chloride Concentration Over Time (All Seasons)



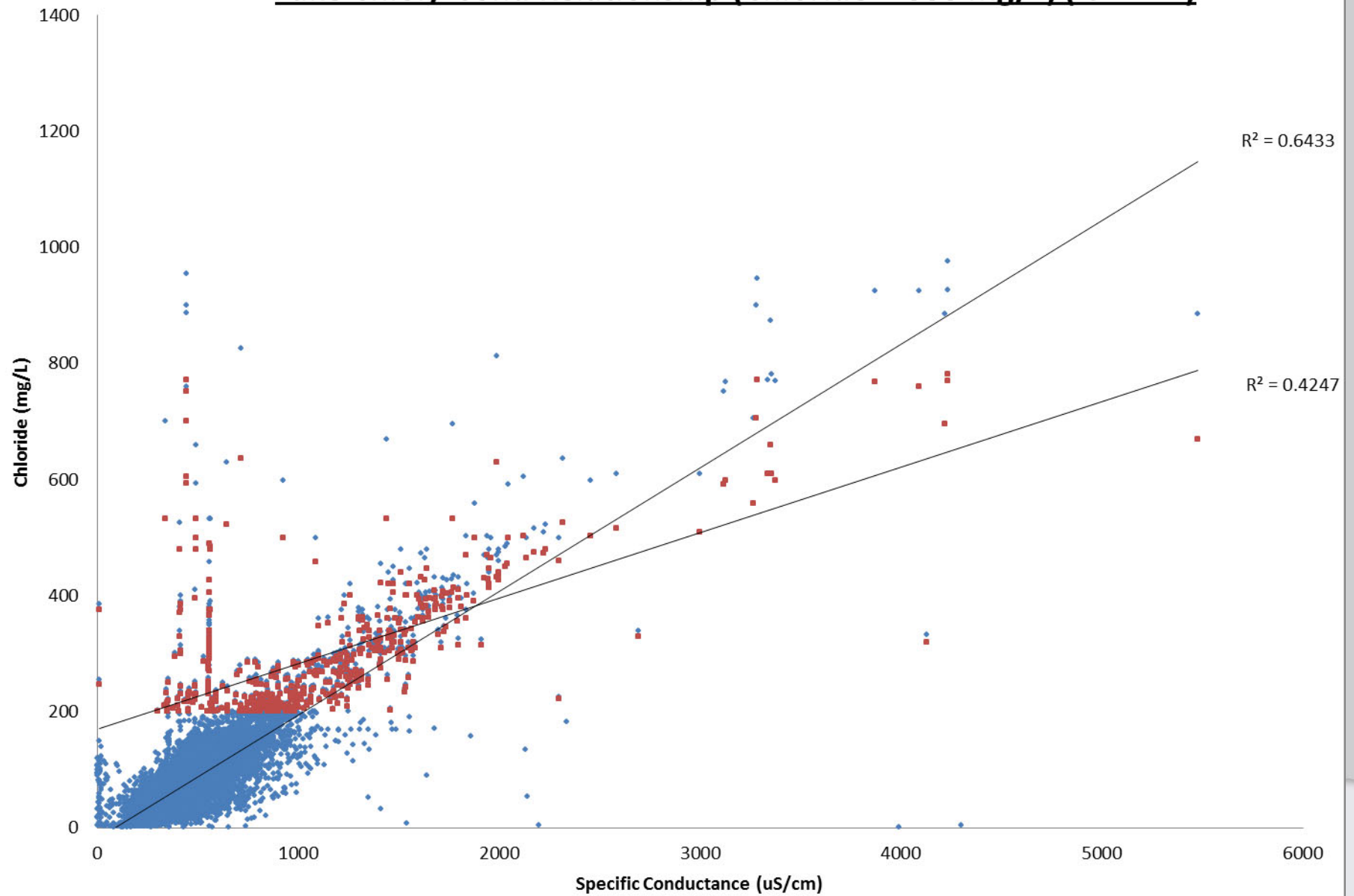
Mean/ Max Annual Stream Chloride and Sampling Effort (All Seasons)



Lake Chlor/ Cond Relationship (Chloride<1000 mg/L) ('62- '11)



Lake Chlor/ Cond Relationship (Chloride<1000 mg/L) ('62- '11)



Source Identification

- Objective
 - Quantify how much and where
- Uses
 - Link cause and effect
 - Set targets
 - Track progress
 - NOT for directly comparing one source with another

Sources

- Sources
 - MnDOT
 - Counties
 - Cities (roads AND sidewalks/parking lots)
 - Park districts
 - Private applicators
 - Homeowners
 - Others???

Source Data Collection Considerations

- What product?
 - Purchasing
 - Usage
 - Application rates
- Where?
 - Entity
 - Route
 - Watershed
- How?
 - Technologies
- When
 - Annual
 - Storm events

City of Minnetonka Example

| Storm # | DATE | DESCRIPTION | OPERATION DETAILS | Reported Salt TNS | Reported Trtd Slit TNS | SAND | Brine Gals | Hot Mix Gals | Precise DATA (Tons) | | | |
|---------|-----------------|--|---|-------------------|---------------------------|------|------------|--------------|---------------------|-----------|-------------|-------------|
| | | | | | | | | | Trtd Salt City | Salt City | Trtd 9 Mile | Salt 9 Mile |
| 1 | 11/13-14 / 2010 | E1. 8" HEAVY WET snow- MAJOR tree damage | Full plowing oper- Sat Full plowing oper- Sun | | 11/13- 41T 11/14 -144T | | | | 6.25 T | | 1.25 T | |
| 2 | 11/21/2010 | E2. Freezing rain- ICE Light snow follows | Full plowing oper @ 1am | | 186.00 | | | | 28.6T | | 123 T | |
| 21 | 3-23,24-10 | E21. Freezing rain overnight- snow begins 3 am- heavy WET snow thru day on 2/23 6-8" total | 3-23- full operation 3-24 Re-plow and clean up | 158.00 | | | 0.00 | | | no info | | no info |
| TOTAL | | | | 684.00 | 1,716.00 | | 2,584.00 | 5,736.90 | 799.14 | 327.45 | 335.45 | 98.60 |

Source Data Collection

- End result
 - Simple, standard, efficient form/process for annual reporting

Targets

- Objective
 - Set voluntary protection goals for non-impaired waters
- Options
 - Use numeric criteria or some percentage of criteria (for example, 90% of criteria)
 - Use existing concentration or some percent increase above existing (for example, 20% increase above existing, or 10% reduction)
 - Use reference or historical condition or some percentage above those conditions
- Alternative or combined with targets
 - Set performance based goals for users (for example, application rates, best practices)

Next Steps

- Continue to compile available data
- Develop and update trend analyses
- Finalize chloride-conductivity relationship and apply to available data
- Select modeling approach, identify data needs, make recommendations for monitoring plan refinement
- Develop source reporting template and circulate for review
- Characterize waters based on existing data

Twin Cities Metro Area Chloride Project

Technical Advisory Committee (TAC) Meeting #2

October 12, 2011, 12:30-2:30 pm, Capitol Region Watershed District office

Attendees: Introductions included answering the question, *what do you hope to gain from being on this TAC?*

| Attendee | Representing | Answer |
|-----------------|-----------------------|--|
| Brooke Asleson | MPCA | guide project outcome with stakeholders |
| Anne Weber | St. Paul | insight/input, compliance, WQ improvement |
| Barb Loida | MnDOT | achievable project outcome |
| Bob Fossum | Cap Reg WD | reduce chloride impacts |
| Cliff Aichinger | Rams-Wash Metro WD | final project findings, solutions |
| Derek Asche | Plymouth | stay informed |
| Hans Holmberg | LimnoTech / MPCA | best available data to inform plan |
| John Erdmann | MPCA | learn, help; today, meeting notes |
| Kari Oquist | Mississippi WMO | tech insight/input on data, analysis |
| Kevin Bigalke | Nine Mile Ck WD | integrate Nine Mile work w/this project |
| Lois Eberhart | Minneapolis | insight/input, compliance, WQ improvement |
| Mark Fischbach | MnDOT | provide practice-based technical help |
| Mark Maloney | Shoreview, APWA | user-friendly/public works-friendly outcomes |
| Ross Bintner | Prior Lake | learn about project, impacts, practices |
| Tom Struve | Minnetonka | improved tracking of chloride usage |
| Udai Singh | Mississippi WMO (alt) | provide technical help, learn more |

Project update

Consultant contracts now in place:

- LimnoTech (Hans Holmberg) – technical component of project work; preparation of main reports
- Fortin Consulting (Connie Fortin) – private applicator usage data, implementation plan development

Project use of waterbody subset:

- Waterbodies in the seven-county metro area will be categorized into four categories:
 - Impaired (exceeds water quality standard, TMDL needed)
 - High Risk (not current listed as impaired but likely to become impairment within 10 years)
 - Non-impaired (sufficient data to clearly define as meeting water quality standard)
 - Insufficient data (little or no data)

Monitoring program:

- Waterbodies include 74 lakes, 27 stream stations, and 7 storm sewer stations
- Monitoring partners are also part of the project Monitoring Sub Group– 12 total, including Watershed Districts, Cities, and regional and federal governmental entities
- Monitoring protocol and quality assurance guidance has been developed and is available on the project website
- Monitoring schedule:

- Duration 3 years total; 1st year now completed, 2nd year underway
- Frequency of lake monitoring is once per season minimum; several partners' ongoing programs continue with higher frequencies during the growing season
- Monitoring results will be provided in a separate report for widespread availability

Project website: has links to Phase 1 Feasibility Study final report, Phase 2 work plan, and other items at <http://www.pca.state.mn.us/index.php/water/water-types-and-programs/minnesotas-impaired-waters-and-tmdls/tmdl-projects/special-projects/twin-cities-metropolitan-area-chloride-project.html>

Technical update:

Overview of technical scope:

- Current tasks:
 - Data analysis – trends
 - Chloride-conductivity relationships – to potentially support surrogate monitoring in the future
 - Source assessment
 - Chloride targets – for non-impaired waters

Project Schedule:

- Draft management, implementation, monitoring reports – Fall 2013
- Final management, implementation, monitoring reports – Fall 2014

Intervening Q & A, discussions

Assessments of waterbodies by MPCA:

- Upper Mississippi (Twin Cities) major watershed – MPCA assessing waterbodies during the winter of 2011-2012 to determine their impairment status
- Special seven-county metro area chloride water quality assessment– to be conducted during the winter of 2012-2013 (arranged especially for chloride project)

Chloride TMDLs completed and in progress:

- Completed TMDLs (Shingle Ck, Nine Mile Ck) will not be modified, but rather incorporated into TCMA Management Plan perhaps.
- In-progress TMDL (Minnehaha Ck) will be guided by chloride project “real-time” findings and will be incorporated into the TCMA Chloride Management Plan.
- Chloride project’s Implementation Plan will apply to the above TMDL areas as well as the entire 7-county Metro Area.

Eagan, Minnetonka achievements:

- Eagan reduced chloride/chemical usage from 170 tons per event in 2005-06 to 88 tons per event in 2000-09.
- Minnetonka has Nine Mile Ck WD goal of 4.2 tons/lane-mile per normal winter season; essentially met last winter (180% of normal winter) with 7.0 tons/lane-mile (equivalent to ~4 tons/lane-mile in “100% normal winter”).

Education/outreach:

- Kevin described Nine Mile’s efforts, related to Minnetonka’s achievements

- Brooke commended Nine Mile WD for their road salt program and suggested that if others are looking for an example of a very comprehensive chloride outreach program they should look to Nine Mile WD – special credit to Claire Bleser
- Chloride criteria/water quality standards review:
 - Current state chloride standards: acute toxicity 860 mg/L; chronic 230 mg/L
 - Background water quality influences chloride toxicity, particularly hardness (decreases chloride chronic toxicity, hence increases allowable Cl^-) & sulfate (increases Cl^- toxicity, hence decreases allowable Cl^-) – findings of Iowa studies
 - Based on above studies, hardness & sulfate levels typical of Minnesota lakes and streams would make the acute chloride standard lower (more stringent), roughly 520 – 620 mg/L, but the chronic standard higher (less stringent), roughly 330 – 400 mg/L.

Remark on statewide chloride assessment:

- Current assessment cycle (begins Feb. 2012) is first cycle in which lakes and wetlands will be assessed for chloride on statewide basis
- Existing chloride water quality standard: *one-hour* average of maximum standard (860 mg/L); *four-day* average of chronic standard (230 mg/L). Impairment occurs if a water body experiences two or more exceedances of either standard in a three-year period containing a minimum of five data points.
- Change to the proposed chloride standard to include sulfate and hardness consideration in calculation is part of the current triennial review process.

Data analysis:

- Both lake and stream chloride concentrations in the metro area show long-term (~30 years) increasing trends
- Chloride concentration rates of change, (from regression analyses of all available chloride–time data) are shown below:

| Approximate slope of trend (mg/L-yr) | | |
|---|---------------------|----------------------|
| Waterbody type | Annual Means | Annual Maxima |
| Lakes | 2.4 | 18 |
| Streams | 0.9 | 12 |

- Chloride – electrical conductivity correlations yielded fair r^2 values:
 - ✓ All data: $r^2 \sim 0.64$ (very strong, considering the large number of samples)
 - ✓ Data subset (chloride > 200 mg/L): $r^2 \sim 0.43$ (also strong)

Intervening Q & A, discussions

Observed chloride levels:

- Good news: most levels are below the 230-mg/L chronic standard

Chloride-conductivity correlations:

- Suggests lab conductivity measurements be taken initially to calibrate field meter data to ensure accuracy

Chloride implementation approach:

- Chloride project's implementation approach will be "universal" across metro area including impaired, non-impaired, and not-yet-assessed waters

Chloride usage:

- Cities and counties at "opposite end of spectrum" (usage increases with driving speed)

Evolution of winter road safety "culture":

- 30 years ago: lots of sand, little salt (only to keep sand from freezing solid)
- Now: safety (saving lives) has no cost limit, but drivers want perfect road conditions conducive to high speed at all times – even during blizzards
- Desirable in future: drivers to slow down! Expect less-than-perfect road conditions in bad weather
- Must educate public, set proper expectations; and find "sweet spot" everyone supports
- Other motivations (not TMDL) should be considered such as cost savings in operations while still maintaining safety

Comment on above "future" scenario:

- Politics won't allow last scenario of "sweet spot" that everyone supports
- MnDOT is currently pursuing bill to reduce highway speed limit to 45 mph during winter storms
- Over application actually makes it more slippery and therefore more of a liability hazard

Measuring road "safety": (several)

- How is road safety measured or Level of Service (LOS)? (Lois Eberhardt)
 - Primarily by numbers of phone calls from the public
 - MnDOT reviews accident histories to measure LOS
 - Community surveys
 - It can be empirical, residents of Prior Lake notice differences in city roads versus county roads or other cities
 - Caveat: public perception makes no distinction among the many road authorities, and also uncontrollable factors such as winter conditions

Public perception is the biggest obstacle, we need a major education campaign similar to the Emerald Ash Borer campaign to allow for reduced application rates.

Source identification:

Intervening Q & A, discussions

Variability of road salt usage tracking:

- Level of road salt application rate tracking varies greatly by cities and between different types of road authorities. Private application rates vary greatly due to liability concerns, and by virtue of the way the contracts are written (many charge by the pound of product applied). Education will need to be more of a marketing approach.
- Nine Mile Ck WD has 6 cities, with road salt tracking ranging from:
 - Detailed records – including driver, usage amount, for each street/road segment and for each snow/ice event

- Gross records – usage city-wide for whole season (usage = total purchases – change in inventory)

Private applicator usage:

- Perverse incentive – private applicators are paid by quantity of chloride/chemical used; hence, use more to make more money
- New Hampshire is an example of trying to address the liability issue through a legislative bill to protect those with a snow & ice plan who are applying appropriate amounts rather than over applying to protect themselves from potential lawsuits due to slip and falls.
- “Branding” for applicators – market services by stressing employee training etc.
- Could cities or watershed districts license/permit private applicators? (Shoreview licenses tree trimmers)
- Lake County, IL, is doing this (“permit” issuance is term used there)
- Nine Mile Ck WD provides homeowners’ associations with list of “private applicators who attended training” – WD cannot legally “recommend” a particular private business but can provide objective information such as this
- MPCA staff is interested in studying how to address the liability concerns

Winter street/road sweeping:

- Minneapolis sweeps up excess salt – do other cities?
- Minnetonka does not – idea is to have on-street salt ready for next snow
- MnDOT does winter sweeping
 - Aimed at contaminants such as lead (Pb), not excess road salt
 - Sweepings sampled for contaminants?
 - Yes, sweepings sampled every 3 years
 - I-35/Hwy 62 corridor to have 2 winter sweepings each year

Source identification (continued):

- Preliminary list of sources includes local, regional, and state government entities

Intervening Q & A, discussions

Additions to list suggested:

- Private applicators – contract with Fortin for this project will be to develop more accurate estimate of their application rates
- Residents/ homeowners – the Education & Outreach Committee (EOC) for this project is putting together a qualitative survey for homeowners to help inform the watersheds and cities as to an estimate of their contribution and therefore the potential reduction opportunities available. This survey will made available to all watershed organizations and any interested cities, counties.
- Commercial/ industrial buildings – contact property managers
- Agricultural/feedlot manure spreading – appears to be significant source in Prior Lake, where spring chloride peaks coincide with spreading operations

- Wastewater treatment plant solids – similar to feedlot manure: solids from Metro Plant widely applied to fields as amendment
- Wastewater treatment plant effluent used for irrigation – e.g., Mystic Lake golf course irrigation caused turf loss from high salinity
- Metropolitan Airports Commission – secondary airports
- Alternative deicing products (many/most contain some salt)
- NPDES-permitted industrial sources – such as pickle producers – MPCA staff will go through files to identify potential sources
- Groundwater – contaminated by infiltration, including intentional stormwater infiltration to meet MPCA permit requirements of watershed districts/WMOs

Communications with wider community:

- Cities on TAC are interested in participating in the voluntary homeowner survey, and others may be interested as well.
- MS4 communications could be done through Minnesota Cities Stormwater Coalition (MCSC). Anne Weber is on the steering committee and will forward the information to the steering committee to pass along. *(The MCSC has declined to coordinate with MPCA on this communication effort at this time).*

Source identification (continued):

- Chloride usage tracking by municipalities
 - ✓ Example of detailed tracking record shown; Minnetonka record will meet Nine Mile Creek WD requirements

Discussion

Data requests from metro-area municipalities for this project:

- Some cities and townships may push back on requests for application rate data
- First project year: suggest asking for method of tracking first, and put in a voluntary request for past 5 years of applications rates. Let them know that we will want this information now or within the next year to best inform the project.

Data Chloride mass balances:

- University of Minnesota/St. Anthony Falls Laboratory study – included metro-area chloride mass balance showing 78% retention
- Possibility raised that on-going accumulation in lakes, wetland and groundwater could account for such high retention. The project lake monitoring program is aimed to help understand this better, 74 lakes in the metro being monitored for 3 years. Some lakes have a much longer data record however.

Groundwater component in the chloride cycle is important to consider. MPCA does currently have groundwater chloride data available.