


Trainer Manual

C02

CITY OF SASKATOON

Water and Sewer Section



Severe Storm Response Trainer Manual

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Table of Contents

PREPARATION FOR TRAINING	1
RESOURCES FOR TRAINING:	1
TRAINING TIME TABLE.....	2
SESSION 1	2
INTRODUCTION	2
SESSION 2	2
SESSION 3.....	19
SESSION 4.....	21
PRELIMINARY FLOOD RESPONSE FORM.....	21
SEVERE STORM RESPONSE CONTACT LIST	21
SEVERE STORM RESPONSE DANGEROUS INTERSECTIONS LIST	21

Preparation for Training

Resources for Training:

- i. A list of the staff requiring training.
- ii. Familiarization with trainer's manual.
- iii. A meeting room.
- iv. Copies of an "Uncontrolled" procedure and trainee manual for each trainee. An "Uncontrolled" document has the word Uncontrolled watermarked across the page.
- v. Example copies of the following forms, for each trainee:
 - Preliminary Flood Response Form
 - Severe Storm Response Contact List
 - Severe Storm Response Dangerous Intersections List
- vi. Presentation and presentation equipment.
- vii. T.V. and V.C.R.
- viii. Environment Canada Stay Smart Stay Alive, Training video
- ix. Discovery Channel, Weather Extreme Tornado, Training video
- x. Certificates of completion for each staff member.
- xi. Doughnuts and Coffee

Training Time Table

Session Number	Time	Activity	7:30am Start Time	8:00am Start Time
Session 1	15min	Introduction	7:30am	8:00am
Session 2	30min	Slide Presentation	7:45am	8:15am
	20min	Video: Environment Canada Stay Alert...Stay Alive	8:15am	8:45am
	25min	Slide Presentation	8:35am	9:05am
	15min	Break	9:00pm	9:30pm
Session 3	90min	Video: Discovery Channel, Weather Extreme Tornado	9:15pm	9:45pm
Session 4	45min	Review Procedure and Forms	10:45pm	11:15pm
		End of Day	11:30pm	12:00pm

Session 1

Session 1 is the introduction. Start by introducing yourself, your name your position how long you have been with the City of Saskatoon and anything else you deem applicable. After your introduction, discuss what the staff will be trained on. An example is given below.

Introduction

The objective of this course is to train staff on how to respond to a severe storm, which produces property damage and flooding. Many different departments will be involved. The three main objectives of this response are: to minimize property damage and personal injury as a result of a severe storm event; to ensure emergency repairs are completed in a timely and efficient manner, while minimizing disruption in service to the customer; to acquire information on failures/deficiencies of the storm sewer collection system.

Session 2

Session 2 begins the slide presentation. The trainee's manual will be handed out at the beginning of this session. The overhead transparencies or power point presentation will be used. Show the slides and read any notes in the trainer's manual. Feel free to discuss the slide further, if required. Try to leave a little time at the end for a question period.

Slide 1



To prepare for this section review each slide. Hand out the trainee manuals before starting the slide presentation

Slide 2

Weather Warnings

- Environment Canada issues severe weather warnings, watches and advisories

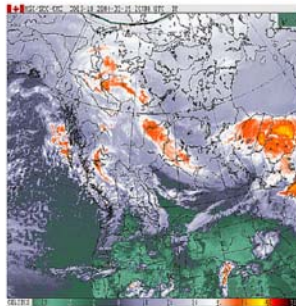


For the safety of people and property, Environment Canada issues severe weather warnings, watches and advisories to the public via the media, weather outlets and Weather-radio Canada.

Slide 3

Weather Watch

- Severe weather may develop.



A WEATHER WATCH alerts you that conditions are favourable for the development of severe weather. Watch the skies and listen for updated watches and possibly weather warnings.

Slide 4

Weather Warning

- Severe weather is occurring or will occur



A WEATHER WARNING alerts you that severe weather is occurring or that hazardous weather is highly probable.

Slide 5

Severe Thunderstorm or Tornado Warning

- Can be issued less than one hour in advance.



Severe thunderstorm or tornado warnings may be issued less than one hour in advance. Other weather warnings may be issued six to twelve hours in advance.

Slide 6

Weather Advisory

- Weather may cause an inconvenience or concern.



A WEATHER ADVISORY means actual or expected weather conditions may cause a general inconvenience or concern, but do not pose a serious enough threat to warrant a weather warning.

Slide 7

Weather Advisory

- Conditions may be favourable for severe weather.



An advisory may also be used when conditions show signs of becoming favourable for severe weather, but the situation is not definite enough or too far in the future to justify a warning.

Slide 8



Slide 9

Rainfall Events

- Most rainfalls don't produce flooding.



Most rainfall events do not produce enough rain to cause flooding. Unless flooding begins to occur, action should not be taken.

Slide 10

Heavy Rainfall

- Stay alert during heavy rains.



During any rainfall, city employees should be alert to weather changes and the possibility of flooding. If the rainfall intensity increases dramatically, the section on confirmed flooding should be reviewed.

Slide 11

Meteorological Services

- During a storm event keep in contact with the meteorological services.



On confirmation of a severe storm event, a Public Works Manager should contact the meteorological services (Environment Canada 1-800-239-0484 or The Weather Network 1-800-463-9463) to: advise of the situation; determine technical cause of event; and request a forecast regarding possible intensification of event.

Slide 12

Areas Prone to Flooding

- Supervisory staff will decide whether areas prone to flooding are checked.



In a heavy rainfall the supervisory staff will make the decision whether to send staff to check on the areas prone to flooding.

Slide 13

Checking for Flooding

- Central Dispatch should be notified of any and all flooding.



If staff is sent to check for flooding the applicable manager should be notified. Central Dispatch should be notified of all flooded locations.

Slide 14

Flood Investigation

- A city of Saskatoon staff member must respond to reports of flooding.



If Central Dispatch is alerted to a possible flooded location by the general public, a City of Saskatoon staff member must be sent to investigate.

Slide 15

Working in Heavy Rain

- Take care on roads during heavy rain.



During heavy rains and hail, visibility will be reduced. Care must be taken when driving and working in traffic.

Slide 16

Landslides

- Land slippage can be a concern during heavy rain.



With heavy rain, land slippage may be a concern. Keep away from steep slopes and retaining walls during severe storms.

Slide 17

Report Landslides

- Report landslides to Central Dispatch or the property owner.



Report any land slippage to Central Dispatch or if it is on private property, to the property owner.

Slide 18

Broken Trees

- Notify Central Dispatch of broken for uprooted trees.



While the City employee travels to the possible flooded location, they must look out for broken trees blocking traffic. If broken trees are found, Central Dispatch must be notified.

Slide 19

Blocked Roads

- Clear blocked roads as soon as possible.



Broken trees may prevent road access to emergency vehicles and personnel. Plans should be made to cut the trees and clear debris from the road as soon as possible.

Slide 20



Slide 21

Dangerous Intersections

- The dangerous intersections must be checked when flooding has been confirmed.

WS-C02 Severe Storm Response Dangerous Intersections List # WS-C02.03		
Line	Intersection	Problem
1	Idylwyld Circle Dr under the overpass on Idylwyld, and The West bank ramp down to Idylwyld south bound	Severe Flooding
2	19th and Idylwyld under the overpass	Severe Flooding
3	19th St. and Idylwyld Ave. N.E.L.	Severe Flooding and loss of Manhole lids
4	19th and Circle Dr overpass	Severe Flooding
5	Rushmore Rd. to E.C.F. when School	Severe Flooding and loss of Manhole lids
6	Louise Court Dr. and Bennett Court Dr.	Severe Flooding and loss of Manhole lids
7	Louise East place (Preston from Louise to Taylor)	Severe Flooding and loss of Manhole lids
8	Cherry St.	Severe Flooding and loss of Manhole lids
9	George Rd. - Vantage Rd.	Severe Flooding and loss of Manhole lids
10	Taylor Broadway	Severe Flooding and loss of Manhole lids
11	Cascade between Williams and Broadview	Severe Flooding and loss of Manhole lids
12	Cascade Coffey	Severe Flooding and loss of Manhole lids
13	Lansdowne Ave. and 17th St. East	Severe Flooding and loss of Manhole lids
14	Taylor St. and City Ave.	Severe Flooding and loss of Manhole lids
15	Idylwyld Dr. North, South of Northridge Dr (Don North of 9th street)	Severe Flooding and loss of Manhole lids

If flooding has been confirmed, the locations in WS-C02 Severe Storm Response Dangerous Intersections List #: WS-C02.03 must be checked.

Slide 22

Underpasses

- Closely monitor all underpasses.



Both the 19th St. & Idylwyld Dr. and the Circle Dr. & Idylwyld Dr. underpasses should be closely monitored or closed.

Slide 23

Circle Dr. & Idylwyld Dr Monitoring

- There are monitors in the storm sewer lift station at this intersection.



The Utility Services Department, wastewater treatment plant control room, has monitors for the Circle Dr and Idylwyld Dr. underpass lift station. If any flooding is observed the treatment plant control room must be notified.

Slide 24

Underpass Flooding

- Notify Fire and Protective and Police Services.



Fire and Protective Services and Police Services should be notified if flooding is observed at any of the underpasses.

Slide 25

Close Intersections

- Close all intersections which are flooded.



Flooded intersections should be closed to traffic and monitored until the flooding has subsided.

Slide 26

Hidden Hazards

- Flooded intersections have hazards such as open manholes.



Flooded intersections may contain hidden hazards such as open manholes. In severe storm events the storm sewer system may surcharge and push the manhole lid off.

Slide 27

Open Manholes

- Open manholes can be difficult to see.



It is difficult to see an open manhole in a flooded intersection; therefore people may inadvertently step or drive into one.

Slide 28

Storm Sewer Rescue

- Are next to impossible during a severe storm event.



It is next to impossible to rescue someone from the storm sewer system. If an individual falls into an open manhole during a rainstorm, they will most likely drown before they can be rescued.

Slide 29

Closing Intersections

- It is very important to close the flooded intersections.



It is extremely important that intersections that may or do have manhole lids off are closed to all traffic.

Slide 30

Closing Intersections

- The sign shop and Police Services can assist.



The Sign Shop, or Police Services, can assist in closing an intersection. Central Dispatch will forward the requests for assistance.

Slide 31

Flood Mitigation

- Contact Central Dispatch or whom ever is required.



If staff are unable to contact Central Dispatch, they are encouraged to contact whomever they need for assistance.

Slide 32

Flooded Intersections

- Staff must not leave a flooded intersection unattended, until the intersection is closed.



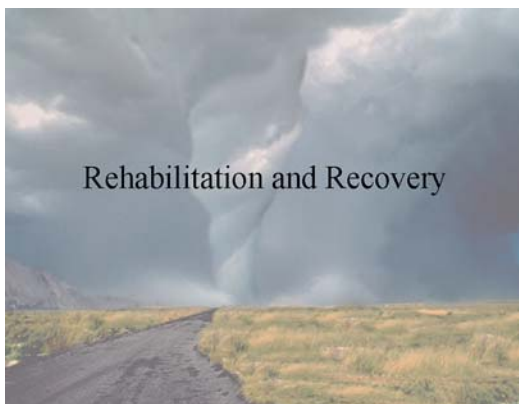
Staff must stay at the flooded intersection to stop pedestrians and monitor the flooding until the appropriate road closure has been erected.

Stop and Watch Video:

Environment Canada

Stay Alert ... Stay Alive

Slide 33



Slide 34

Rehabilitation

- Rectify problems caused by flooding.



After the immediate flooding safety concerns have been met, action should be taken to rectify any problems caused by the flooding.

Slide 35

Sewer Blockages

- The flooding may be due to a blockage.



If the flooding is due to a blockage, the storm sewer may require flushing.

Slide 36

Vac-Trucks

- Sewer vac-trucks can clear debris from the storm sewer.



Sewer Vac-trucks may be required to clear debris from catch basins and catch basin leads.

Slide 37

Sweepers

- Sweeper can clear mud and debris from streets.



Sweeper trucks will be required to remove debris from flooded streets.

Slide 38

Broken Trees

- The Parks Branch will remove any broken trees.



The Parks Branch will remove broken trees and tree branches. Requests for broken tree removal should go through Central Dispatch

Slide 39

Damaged Power lines

- Electrical Systems Branch or SaskPower will repair damaged power lines.



Electrical Systems Branch or SaskPower will repair broken and downed power lights/lines.

Slide 40

Requests for Assistance

- Requests for assistance should have approval.



Requests for equipment and staff should go through Central Dispatch and have the approval of a Manager and/or Supervisor.

Slide 41

Documentation



Slide 42

Job and Location Numbers

- Use Job # 50571 and the location # posted in Central Dispatch.

$$\begin{array}{ccccccc} 4 & 0 & 0 & 1 \\ \hline \underbrace{} & \underbrace{} & & \\ \text{Year 2004} & \text{Number of Storm Events} & & \\ & \text{in the Given Year} & & \end{array}$$

The job number 50571 and the location number for that specific storm must be used for all activities required due to the storm event. Personnel, equipment and materials used for each storm event will be documented this way.

Slide 43

Preliminary Flood Response Form

- Must be filled out for every flooded location that city staff responded to.

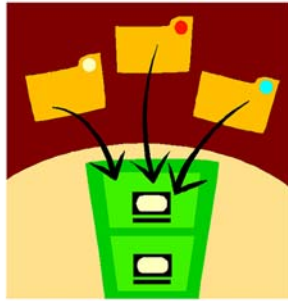
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A Preliminary Flood Response Form #: WS-C02.04 should be filled out for each location where surface flooding occurred and a City of Saskatoon employee responded.

Slide 44

File Paperwork

- File paperwork appropriately.



All paper work should be filed appropriately.

Slide 45

Follow Up



Slide 46

Facilitate Follow Up Activities

- The Public Works Manager will appoint a staff member to facilitate follow up activities.



The Public Works Manager(s) and applicable staff will arrange a meeting and appoint a staff member to facilitate all follow up activities for this particular storm. Depending on the severity of the storm the appointed staff member may need to fully investigate the storm event or simply record flooded locations.

Slide 47

Drainage Complaints

- Complaints are handled by the Municipal Engineering Branch.



General drainage complaints are to be handled by Infrastructure Services, Municipal Engineering Branch.

Slide 48

Gather Information

- The storm information should be directed to the staff member appointed to facilitate follow up activities.



The appointed staff member would have all complaints, claims and paper work directed to them. If no paperwork is forthcoming, they may need to talk to the Central Dispatch staff and the Roadways Section's Superintendents to get information on any flooding.

Slide 49

Summary

- A summary report must be prepared.



The information gathered from the storm event will be organized, and a summary will be prepared.

Slide 50

Check Lists

- Check and Update the Dangerous Intersections List.

Intersection	Problem
1. Highway 100 and 101st St. under the overpass on Highway 100 and the road ramp down to Highway 101.	Severe Flooding
2. Highway 100 and 102nd St. under the overpass on Highway 100 and the road ramp down to Highway 101.	Severe Flooding
3. Highway 100 and 103rd St. under the overpass on Highway 100 and the road ramp down to Highway 101.	Severe Flooding and loss of Manhole lids
4. Highway 100 and 104th St. under the overpass on Highway 100 and the road ramp down to Highway 101.	Severe Flooding
5. Highway 100 and 105th St. under the overpass on Highway 100 and the road ramp down to Highway 101.	Severe Flooding and loss of Manhole lids
6. Highway 100 and 106th St. under the overpass on Highway 100 and the road ramp down to Highway 101.	Severe Flooding and loss of Manhole lids
7. Highway 100 and 107th St. under the overpass on Highway 100 and the road ramp down to Highway 101.	Severe Flooding and loss of Manhole lids
8. Highway 100 and 108th St. under the overpass on Highway 100 and the road ramp down to Highway 101.	Severe Flooding and loss of Manhole lids
9. Highway 100 and 109th St. under the overpass on Highway 100 and the road ramp down to Highway 101.	Severe Flooding and loss of Manhole lids
10. Highway 100 and 110th St. under the overpass on Highway 100 and the road ramp down to Highway 101.	Severe Flooding and loss of Manhole lids
11. Highway 100 and 111th St. under the overpass on Highway 100 and the road ramp down to Highway 101.	Severe Flooding and loss of Manhole lids
12. Highway 100 and 112th St. under the overpass on Highway 100 and the road ramp down to Highway 101.	Severe Flooding and loss of Manhole lids
13. Highway 100 and 113th St. under the overpass on Highway 100 and the road ramp down to Highway 101.	Severe Flooding and loss of Manhole lids
14. Highway 100 and 114th St. under the overpass on Highway 100 and the road ramp down to Highway 101.	Severe Flooding and loss of Manhole lids
15. Highway 100 and 115th St. under the overpass on Highway 100 and the road ramp down to Highway 101.	Severe Flooding and loss of Manhole lids

New flooded locations (if any) will be added to the WS-C02 Severe Storm Response Dangerous Intersections List #: WS-C02.03. If a dangerous intersection is checked during a severe storm event and no flooding has been observed, then the intersection can be removed ~~from the~~ from the list.

Slide 51

Forward Information

- Forward to the Municipal Engineering Branch, Manager of Design and Planning.

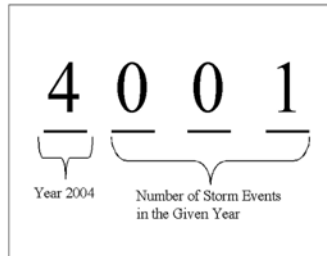


Information regarding flooding will be forwarded to the Municipal Engineering Branch, Design and Planning Manager, or their designate.

Slide 52

Location Numbers

- Location numbers must be changed after each storm.



The location number used during the storm event must be closed after all remediation activities are complete. A new location number must be initiated. The location numbering is modified as shown in Figure 46 - Location Numbering. The staff member appointed to facilitate follow up activities will close the old location number and open a new one.

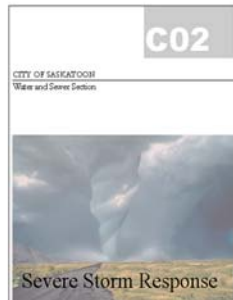
Slide 53



Slide 54

Response Review

- The overall response to the severe storm will be reviewed.



The Staff member appointed to facilitate all follow up activities shall also review the over all response to the storm event. The Severe Storm Standard Operating Procedure will be updated with the required changes.

Slide 55

Identify Problems and Solutions

- Emergency needs must be met.



Determine if all emergency needs have been met. If the emergency needs were not met, solutions must be found.

Slide 56

Response Deficiencies

- The deficiencies in response must be corrected.



Once any response deficiencies are identified, the requested resources will be ordered.

Notes:

Slide 57

Resources Required



Slide 58

People



Slide 59

Manager on Call (Public Works)



There is a different Manager on Call every day in the Public Works Department. Central Dispatch will have a list of who is the Manager on Call for any given day.

Slide 60

Dispatch Personnel



Public Works Central Dispatch Personnel are on staff 24hr a day.

Slide 61

Wastewater Supervisor



The Wastewater Supervisor can be contacted through Central Dispatch.

Slide 62

Labourer



Labours from various sections within Public Works may be required to assist with response and remediation.

Slide 63

Staff Member Appointed to Facilitate Follow up Activities



The Public Works Management will appoint the Staff Member to facilitate follow up activities.

Slide 64



Slide 65

Vac-Truck



The vac-truck can be used to clear blocked storm sewer mains and catch basin leads.

Slide 66

Sewer Bypass Pump



A sewer bypass pump can be used to divert sewer flow from one manhole to the next. The sewer operations section has bypass pumps from 2 inch to 10inch.

Slide 67

Wood Chipper



The Parks branch use the wood chippers to clear broken tree branches.

Slide 68

Traffic Control Devices



The sign shop can erect the appropriate traffic control devices.

Slide 69



Slide 70

Sandbags



Sand bags can be acquired at the Public Works Stores. Various hardware stores also carry sand bags, and they can be purchased from them if the situation warrants.

Slide 71



Session 3

Session 3 will include the video: Discovery Channel, Weather Extreme: Tornado. This video lasts approximately 55min. If time permits discuss individual experiences with storm events. If time is restricted this video may be left out of the training.

Session 4

Session 4 will review the procedure and all the required forms. Start by handing out all the forms, then review each. A general overview of each form is given below.

Preliminary Flood Response Form

The preliminary flood response form gathers information from a flooded location for the Municipal Engineering Branch, so they may find solutions to the flooding problem. The staff member ~~whom~~^{who} responded to the flooding completes this form. When complete it should be given to their supervisors ~~whom~~^{who} will forward it to the staff member appointed to facilitate follow up activities.

Severe Storm Response Contact List

The severe storm response contact list is a list of phone numbers and agencies which may need to be contacted in the event of a severe storm.

Severe Storm Response Dangerous Intersections List

The severe storm response dangerous intersections list is a list of the intersections in the city which are known to have flooding problems during severe storm events. It has a list of prioritized intersections on the first page, which are the most dangerous. On the second page are intersections and roadways that also flood during severe storm event but are not considered as dangerous. These less dangerous intersections should also be checked during a storm event but only if time permits.