



SNOW & ICE CONTROL PLAN

UPDATED NOVEMBER 2016

Acknowledgements

The City would like to acknowledge the contributions of those entities involved in the creation of the first Snow and Ice Control Plan in 2007.

Centennial City Council

Arapahoe County Council for Organized Responsible Development (ACCORD)

Arapahoe County

Arapahoe County Sheriff's Office

Bristol Cove Homeowners' Association

Bus Stop Advertising, LLC

Centennial Council of Neighborhoods (CenCON)

Cherry Creek School District

City of Centennial Staff

Community Mobility Services

Cunningham Fire District

Independent District Engineering Services, LLC (IDES)

Littleton Public School District

Outdoor Promotions

Parker Fire District

Regional Transportation District (RTD)

South Metro Fire District

South Suburban Parks and Recreation

The Aurora Chamber of Commerce

The Knolls Homeowners' Association

Xcel Energy

Acknowledgements

The City would like to acknowledge the contributions and assistance of the members of the Snow and Ice Advisory Task Force in the creation of the first Snow and Ice Control Plan in 2007.

Tom Ashburn, Xcel Energy	Becky O'Guin, Parker Fire District
Lieutenant Jim Babylon, Parker Fire District	Jim Pankonin, Arapahoe County Public Works
Stuart Bunt, South Suburban Parks and Recreation	Sherry Patten, City of Centennial Staff
Gail Carissimi, City of Centennial Staff	Ron Podboy, Centennial Council of Neighborhoods
Shannon Carter, Arapahoe County	Charles Powell, Bristol Cove Resident
Carla Coburn, City of Centennial Staff	Jill Proctor, City of Centennial Staff
Kanoe Cockett, Littleton Public School District	Andrea Rasizer, Arapahoe County
Mike Connor, City of Centennial Staff	Nancy Reubert, City of Centennial Staff
Sergeant Randy Councill, Arapahoe County Sheriff's Office	Jane Rieck, ACCORD
Tex Elam, Community Mobility Services	Tom Rouen, Bristol Cove Homeowners' Association
Susie Ellis, City of Centennial Staff	Carolyn Rudy, Bristol Cove Resident
Guy Ford, Independent District Engineering Services, LLC	Dave Schmit, Arapahoe County Public Works
Frank Green, Centennial Council of Neighborhoods	Monty Sedlak, Arapahoe County Public Works
Mar-Lee Gross, Arapahoe County Public Works	Errol Stevens, Regional Transportation District
Randy Hawbaker, Cherry Creek School District	Andrea Suhaka, Centennial City Council
Caleb Hebel, Bus Stop Advertising, LLC	Asst. Chief Mike Walters, Cunningham Fire District
Kevin Hougen, The Aurora Chamber of Commerce	Jacque Wedding-Scott, City of Centennial Staff
Brad Leitner, Littleton Public School District	Ron Weidmann, Centennial City Council
Rhonda Livingston, District IV Resident	Marie White, City of Centennial Staff
Joseph McMahon, Arbitration, Facilitation, and Mediation	Bruce Williamson, Arapahoe County Sheriff's Office
Vorry Moon, Centennial City Council	Gary Young, Outdoor Promotions, Inc.
Chief Dan Mulroney, South Metro Fire District	Phil Young, Outdoor Promotions, Inc.
Cathy Noon, Centennial Council of Neighborhoods	Dave Zelenok, City of Centennial Staff

Contents

I. Purpose, Responsibilities and Policies

A. Purpose	1
B. Responsibilities.....	1
C. Policy Considerations	1
D. Policy Statement.....	1-2
E. Street Maintenance Policy	2-3

II. Winter Storm Operations

A. Service Provider Responsibilities.....	3-4
B. Severe Winter Storm Emergency Management.....	4
C. Winter Storm Categories for Operations	4-5
D. Plowing and Material Spreading Procedures	5-6
E. Ice Control Procedures	6
F. Materials	6-7
G. Equipment	7-8
H. Storm Summary Report	8
I. Hauling and Dumping Procedures	8
J. Towing Procedures.....	8-9
K. Travel Restrictions and Street Closures.....	9

III. Communications Plan

A. Statement of Objectives.....	9
B. Key Communication Tools.....	9
C. Information Dissemination	9
D. Internal Communications (City of Centennial and Special Districts).....	9
E. External Communications.....	9-10
F. Winter Storm Notices.....	10

IV. Interagency Plans and Coordination

A. Statement of Objectives.....	10
B. Sheriff's Office	10
C. Neighborhood Associations and School Districts	10-11
D. City Website	11
E. Businesses	11

V. Volunteers, Sidewalks, Driveways, Parking and Private Plowing

A. Volunteers	11
B. Sidewalks	11-12
C. Driveways.....	12
D. Parking on Snow Routes	12
E. Use of Private Contractors.....	12

Appendices

Contact List for City Management Staff.....	13
Emergency Agencies Contact Information	14
District Contact List.....	15-16
Winter Preparedness Safety Tips	17-18
Snow and Ice Control Route Maps	19-21
Sidewalk Snow Removal Maps.....	22-23
Resolution No. 2007-R-126	24-25

I. PURPOSE, RESPONSIBILITIES AND POLICIES

A. PURPOSE

A Snow and Ice Control Plan (Plan) is necessary to make a clear statement of the policies and intent of the City of Centennial (City) winter maintenance program and establish a plan for communications, operations and procedures. The Plan serves as a guiding document and is considered a living document subject to changes and revisions. The Plan shall reflect the expectations of the City management and maintain flexibility for modifications.

B. RESPONSIBILITIES

The City Council is responsible for approving the Plan policies and providing guidance and input for the operations, communications and coordination procedures.

The City Manager is responsible for the Plan implementation and management, either through staff, consultants or contractors.

The Director of Public Works under the direction of the City Manager, develops, edits, updates and implements the Plan, in addition to day-to-day management and administration of the Plan.

C. POLICY CONSIDERATIONS

In developing the policies for how to best undertake winter maintenance activities, the City balances a number of factors including, but not limited to, the following:

- Public safety,
- The amount of funds available for these activities,
- The number and availability of personnel to engage in these activities,
- The desire to maintain an efficient transportation system,
- The ability to deliver emergency services,
- Minimizing damage to City property and personal property, and
- Effectively allocating resources.

D. POLICY STATEMENT

The snow and ice control objectives of the City are to:

- Ensure the public safety,
- Provide cost effective snow and ice control services,
- Minimize the economic loss to the community,
- Reduce the hazards of winter conditions to motorists, and
- Facilitate the operation for transit and emergency service vehicles.

As a policy, the City will:

- Maintain its priority roadways, which consist of major and minor arterial streets, access for emergency services, major collector streets, school zone and business access and special treatment locations on residential streets.
- Maintain its priority roadways with the intent to create acceptable winter driving conditions for vehicles that are properly equipped for winter driving and are operated in a manner consistent with good winter driving habits.

- Not maintain Priority 3 streets except for emergency requests by the Sheriff's Office or when supplemental plowing is directed by the City Manager or designee in the event of a severe winter storm.
- Provide supplemental plowing of Priority 3 streets when directed by the City Manager or designee. Supplemental snow plowing shall include one pass in each direction on all Priority 3 streets concurrent with snow removal on the priority street network.
- Maintain only the public sidewalks delineated on the Sidewalk Snow Removal Maps included in the Appendices. Additional public sidewalks will not be maintained unless the City dedicates additional resources to clear additional public sidewalks of snow.
- Communicate important, up-to-date information about snow and ice control operations during severe winter storms to Centennial citizens, school district officials, health care facilities, special districts, utilities, local businesses and the City's largest employers.

The City has a commitment to provide effective and efficient winter maintenance to its citizens. However, it must be noted that the following circumstances may prevent or delay complete implementation of this Plan:

- Equipment breakdown
- Vehicles disabled in deep snow
- Weather so severe it causes crews to be called in from their duties for safety
- Equipment rendered inadequate by the depths of the snow or drifts
- Crew breaks, and breaks required for re-fueling and refilling materials
- Mechanical failures and needed repair
- Parked or stalled vehicles that restrict or prevent access
- Unforeseen emergencies

E. STREET MAINTENANCE POLICY

Streets will be maintained according to the following priorities. The priorities and their criteria are as follows:

Priority 1: These roadways are the major arterial streets and are generally located on the one-mile grid and have four or more travel lanes. Also included are streets that provide access for emergency services such as fire stations, medical facilities and the Sheriff's Office. Priority 1 streets will be maintained for all snow events.

Priority 2: These roadways are minor arterial and major collector streets and are generally streets that connect Priority 1 streets to Priority 3 streets. Also included are the main street that provides access to schools, major office areas and business areas such as grocery stores and service stations. Priority 2 streets will be maintained for all snow events.

Special Attention Areas: Certain streets that do not meet the classification of Priority 1 or Priority 2 streets have been identified for snow and ice control operations at specific locations. The locations for streets in this category are limited to chronic icing problems at hills, curves or intersections that are likely to cause traffic accidents. These streets will be maintained after completion of the Priority 1 and 2 streets.

Priority 3: All remaining streets that are not specifically identified as Priority 1 or Priority 2 streets. Priority 3 streets will not be maintained, unless snow removal is authorized by the City Manager or designee. If severe winter storm conditions warrant and when directed by the City Manager or designee, supplemental snow plowing of Priority 3 streets will be initiated. The guideline to be considered prior to authorizing snow removal service on

Priority 3 streets is based on weather forecasts predicting a snow accumulation of six (6) inches or more. Additional guidelines to be considered may include 1) the temperature forecast for the next 24 to 48 hours after the storm and 2) the forecast for additional significant snow within the next 12+ hours after the storm. De-icing material will not be applied to the Priority 3 streets. Priority 3 streets will be maintained concurrently with the Priority 1 and 2 streets using additional resources as an enhanced service provided to the City. One pass in each direction on a Priority 3 street by a pick-up truck plow is the level of service expected for supplemental snow plowing, which will take approximately 10 hours to complete. Multiple applications of supplemental snow plowing on Priority 3 streets will be at the discretion of the City Manager or designee.

The Plan's Appendix and the City's website, www.centennialco.gov, provide the current snow route map which shows the streets that will be maintained for snow and ice control operations. Streets that are not shown on the map may be added if they meet the criteria of the priority policy. Due to budget impacts, requests to add a street to the Priority 1 or 2 snow routes will be compiled as they are received and evaluated after each winter season. Requests to add a street to the Priority 1 or 2 snow routes may be made in writing to the City of Centennial Public Works Department at: City of Centennial Public Works, Attn: Snow Removal, 13133 E. Arapahoe Rd, Centennial, CO 80112.

II. WINTER STORM OPERATIONS

A. SERVICE PROVIDER RESPONSIBILITIES

The City provides snow and ice control services through its private contractor for public works services, hereafter referred to as the Service Provider. The Service Provider's organizational structure for winter storm management will provide effective and uniform snow and ice control services. The Service Provider shall routinely report the status of operations, street conditions and problem areas. The actions taken by the snow crews under the direction of the Service Provider's management staff are based on the policies established by this Plan.

For standard contract snowplowing operations, the Service Provider will complete snow removal on all Priority 1 and 2 streets in accordance with the City's Technical Standards for Snow Removal. There are 578 and 549 lane miles (travel lanes) within Priority 1/2 routes and Priority 3 routes, respectively.

Several streets in the City are state highways; therefore, snow and ice control on these streets is performed by CDOT. The streets are I-25, Parker Road, University Boulevard, and Arapahoe Road between I-25 and Parker Road.

When a snow storm is predicted, snow removal personnel are called to report for duty. Snow plow operators and their trucks are assigned to designated snow routes in the City. The weather forecast and the predicted intensity of the storm dictates the required level of staffing by the Service Provider for each snow storm.

Severe winter storms are characterized by heavy snowfall, high winds and freezing temperatures. If severe winter storm conditions warrant, and when directed by the City Manager or designee, supplemental snow plowing of Priority 3 streets will be conducted by the Service Provider, which shall be concurrent with the Priority 1 and 2 streets. One pass in each direction on a Priority 3 street by a pick-up truck plow and no use of deicer material is the level of service expected for supplemental snow plowing.

A variety of materials may be used for ice control such as conventional anti-skid mixture, liquid anti-icer and solid deicer (see the description of these materials later in this Plan). The required materials and application rates are determined by the Service Provider based on current and future weather conditions.

B. SEVERE WINTER STORM EMERGENCY MANAGEMENT

- Resolution No. 2007-R-126 authorizes the Mayor and City Manager to approve contract expenditures for necessary services and equipment in order to respond to unusual weather in a timely and expedient fashion. The expenditures shall not exceed \$150,000 during any 14-day period. The resolution is included in the Appendix of this Plan.
- Emergency Operations Center (EOC) – The City’s EOC is located with the County EOC at the Arapahoe County Sheriff’s Office (ACSO). The ACSO activates and manages the EOC in the event of a severe winter storm. The City will provide a representative to be present in the EOC.
- Incident Command Post (ICP) – The City will establish an ICP at the City Civic Center or other designated location if necessary. City staff at the ICP will be responsible to:
 - Communicate with the EOC and keep it advised of the status of the storm and road conditions.
 - Act as the communications center, in coordination with the EOC, for requirements of the Plan, public information releases and interaction with the media.
 - Act as the coordinating center for snow and ice removal operations. Monitor the equipment status, personnel, street conditions and all aspects of the field operations.

C. WINTER STORM CATEGORIES FOR OPERATIONS

For the purposes of this Plan, winter storms can be categorized into four basic types. The response to the storm varies for each category. The following discussion presents information concerning the service levels maintained and the materials used for each category of storm.

Category I

- Predicted Snowfall Amount: Trace – 2 inches
- Service Level: Maintain Priority 1 and Priority 2 routes during the storm. Priority 3 streets are not maintained.
- Materials: Liquid anti-icer and/or solid deicer may be used on a limited basis.

Street treatment may consist of applying liquid anti-icer to bridges and overpasses prior to the onset of the storm. Solid deicer may be used at limited locations depending upon the accumulation and street conditions.

Category II

- Predicted Snowfall Amount: 2 – 6 inches
- Service Level: Maintain Priority 1 and Priority 2 streets during storm. Priority 3 streets are not maintained.

- Materials: Solid deicer will be used and liquid anti-icer will be used only as needed.

Heavy equipment, such as loaders and graders, is not required for storms at this level. Street treatment consists of plowing and applying solid deicer during the storm. Liquid anti-icer may be applied to bridges and overpasses prior to the onset of the storm.

Category III

- Predicted Snowfall Amount: 6 – 12 inches
- Service Level: Maintain Priority 1 and Priority 2 streets during storm. Priority 2 street maintenance may be limited, depending upon the severity of weather conditions. Priority 3 streets will be maintained by concurrent supplemental plowing as authorized by the City Manager or designee.
- Materials: Solid deicer and/or anti-skid materials will be used on Priority 1 and 2 streets. Liquid anti-icer will not normally be used.

Storms at the upper snowfall level may require heavy equipment such as loaders and graders. Street treatment consists of plowing during the heavy snowfall period and transitioning to application of solid deicer as snowfall ends and loose snow is removed.

Category IV

- Predicted Snowfall Amount: 12 inches or more
- Service Level: Priority 1 and 2 streets are maintained to remain passable during the storm event. Priority 3 streets will be maintained by concurrent supplemental plowing as authorized by the City Manager or designee.
- Materials: Solid deicer and/or anti-skid materials will be used on Priority 1 and 2 streets. Liquid anti-icer will not normally be used.

This category includes severe winter storms with sufficient snowfall that causes a major disruption in the transportation system. Major roadways, including interstate highways, may be closed. Businesses and schools may also be closed. Storms in this category require all available personnel and equipment and may include contracted snow removal personnel and equipment.

D. PLOWING AND MATERIAL SPREADING PROCEDURES

- The Service Provider, in coordination with the City Manager or designee, will be responsible for determining the number of personnel and types of equipment to be dispatched during each snow storm. Each storm is variable, which shall be considered when assignments are determined. The Service Provider will determine the application rate of the materials in accordance with supplier recommendations, environmental guidelines and acceptable municipal practices.
- The Service Provider will implement methods and procedures to monitor weather conditions in order to begin operations as soon as possible after accumulation begins and snow can be effectively plowed. Streets shall be plowed and/or deiced in accordance with the street plowing priority policy as defined in the Plan. Priority 1 and Priority 2 streets shall be plowed concurrently, but the number of trucks assigned to Priority 1 and Priority 2 streets shall be as determined by the Service Provider.

- Priority 1 streets will be plowed such that snow is removed from all travel lanes during the storm and from turn lanes after the snowfall has ended. This may require pushing snow onto sidewalks in cases where the sidewalk abuts the curb. Snow plowed onto public sidewalks will not be removed by the City, except for sidewalks in the Sidewalk Snow Removal Maps.
- Priority 2 streets with four lanes will be plowed such that snow is removed from one travel lane in each direction (the center travel lanes) and from turn lanes after the snowfall has ended. Priority 2 streets with two lanes will be plowed as wide as possible without pushing snow onto the public sidewalks. One plow pass in each direction will be made on Priority 2 streets in residential areas in order to keep snow from being pushed into the parking area or onto sidewalks.
- One plow pass in each direction will be made on Priority 3 streets when Priority 3 snow removal is authorized by the City Manager or designee.
- The City will not remove rows of snow across driveways that are created by snowplows.



E. ICE CONTROL PROCEDURES

- Priority 1 and 2 streets will receive proactive ice control by the Service Provider through the application of de-icing materials during the snow event. If ice forms after snow events in a travel lane or in the gutter causing the snowmelt runoff/water into the travel lane, ice control will be performed either through the application of de-icing materials or by mechanical means.
- Priority 3 streets will be proactively monitored by the Service Provider for ice build-up, and the Service Provider will remove ice when conditions warrant. Residents may also request the evaluation of a specific location for ice removal by contacting the City at 303-325-8000. Generally, the criteria the City uses to identify the highest priority locations for ice-cutting services includes either ice build-up in the travel lane or ice forming in the gutter to the point that snowmelt runoff/water is forced onto the sidewalk. The removal of ice build-up will typically occur one time per location, but additional ice-cutting service may be provided based on the winter season and the number of locations needing ice removal.

F. MATERIALS

1. Deicing Solids

During normal ice control operations, a solid deicing material is spread on the street pavement to melt ice and packed snow. The numerous and changing deicing solids that are commercially available will be evaluated prior to each winter season by the public works department and purchased based on performance and cost.

Typical deicing solids used by Colorado front-range cities include:

- Rock salt – One hundred percent sodium chloride (NaCl), mined natural white salt supplied to the Colorado region by railroad cars from Kansas. Application temperature to 20 degrees F.

- Ice Slicer® - mined natural salt from Redmond, Utah. It is reddish in color, 93.5 percent sodium chloride and 6.5 percent minerals. It is 50 percent more expensive and 6.5 percent less corrosive than white rock salt.
- Rapid Thaw® - mined natural salt similar to Ice Slicer®. It is reddish in color, 90% sodium chloride and 10 percent minerals. It is 75 percent more expensive and 10 percent less corrosive than white rock salt.
- Caliber M-1000® - a blend of 30 percent magnesium chloride solution and 70 percent corn by-product. Twice as expensive but 78 percent less corrosive than white rock salt.
- ClearLane® - rock salt (98 percent) enhanced with a mixture of liquid magnesium chloride, a PNS approved corrosion inhibitor and a coloring agent (2 percent). Lower melting temperature and may provide less scatter when spread on pavement. It is 25 percent more expensive and 67 percent less corrosive than white rock salt.
- Anti-skid material - Salt/Aggregate Mixture – aggregate material typically mixed with 7 percent to 25 percent white rock salt. This material may be effective in certain temperature or street conditions.

2. Anti-icing Liquids

Prior to snow plowing operations, a liquid material may be sprayed on the street and bridge pavement to prevent bonding of packed snow and ice to the pavement. The numerous and changing anti-icing liquids that are commercially available will be evaluated prior to each winter season by the public works department and purchased based on performance and cost.

Typical anti-icing liquids used by Colorado front-range cities include:

- Magnesium Chloride (MgCl) – CDOT analysis shows low corrosiveness and low environmental degradation. Refreeze temperature of 4 degrees F.
- FreezGard® - magnesium chloride hexahydrate product with decreased refreeze temperature. It is 30 percent more expensive than MgCl.
- Apex® - magnesium chloride based product with enhanced melting and temperature capability. It is 40 percent more expensive than MgCl and refreeze temperature of -8 degrees F.
- Ice Ban® - magnesium chloride based product with enhanced corn based inhibitor for decreased refreeze temperature similar to Apex®. It is 50 percent more expensive than MgCl.

G. EQUIPMENT

The Service Provider's standard snow removal equipment includes plow trucks and front-end loaders. This equipment is continually maintained for efficient and effective service. Road graders, pick-up truck plows and additional loaders for supplemental plowing will be provided through the Service Provider's company resources, rental contracts or subcontractors.

Plowing operations are performed by plow trucks, which consist of tandem axle or single axle dump trucks equipped with a plow and an anti-icing or deicing material spreader. The liquid and granular material spreaders are equipped with computerized spreader controllers. All snow removal equipment shall be tracked in real time (5-second ping) using Automatic Vehicle Location/Global Positioning System.



H. STORM SUMMARY REPORT

When the storm is over, the Service Provider shall prepare a written summary of the snow and ice control operation that will contain:

- Work Order number,
- Starting and ending time of operations,
- Number of miles plowed,
- Amount of material used,
- Number of CDL hours used,
- Brief analysis and discussion of problems encountered and recommendations, and
- Estimated snow depth.

When supplemental plowing is directed, the Service Provider shall also include the following information in the written storm summary:

- Identification of each piece of equipment and each operator,
- Start and end time for each piece of equipment and each operator, and
- For Priority 3 snow removal, the number of pickup trucks and starting and ending time for each pickup truck.

The post-storm summary shall be submitted to the Public Works Director within five work days for information and review.

I. HAULING AND DUMPING PROCEDURES

The Service Provider, with direction given by the City Manager or designee, will identify locations used for dumping snow, if sites are available. Dumping at or hauling to these sites from private property without authorization is prohibited.

J. TOWING PROCEDURES

Towing stalled or abandoned vehicles may be necessary so that the snow and ice control operations can be effective.

The Sheriff will authorize towing of stalled or abandoned vehicles for safe traffic flow. The Sheriff's Office may dispatch a commercial towing company to provide the required assistance. The Sheriff's Office maintains a list of commercial towing companies who have contracts with the County to provide this service.

If a vehicle has been towed, the owner should contact the Arapahoe County Sheriff's Office Dispatcher at 303-795-4711 to determine the location of the vehicle.

K. TRAVEL RESTRICTIONS AND STREET CLOSURES

During certain winter storm events it may become necessary to close streets or portions of streets to traffic. The Arapahoe County Sheriff may restrict the type of vehicles that may be operated on City streets during severe weather conditions and may order that certain streets be closed. Every effort will be made to alert the public of any restrictions and/or closures through the news media, community contacts, and posted on the City's website, www.centennialco.gov. This action will only be taken if the streets are considered unsafe for travel.

III. COMMUNICATIONS PLAN

A. STATEMENT OF OBJECTIVES

It is the objective of the City to communicate important, up-to-date information about snow and ice control operations to Centennial citizens, school district officials, health care facilities, special districts, utilities, local businesses and the City's largest employers.

B. KEY COMMUNICATION TOOLS

Communication tools to be used to disseminate information during severe weather incidents will include media and television as well as email, websites, social media, and cell phones.

The City will maintain a list of community contacts that may be used during snow and ice control operations. This list will be updated at least annually.

C. INFORMATION DISSEMINATION

The Public Information Manager for the City or designee will be responsible for information gathering from the Emergency Operations Center and any other sources, and disseminating the information to key contacts such as the Mayor, City Council, neighborhood associations, and the Littleton Public School and Cherry Creek School Districts. The Communication Directors for the two local school districts will be contacted by the Public Information Manager and it is then the school district's responsibility to make the appropriate contacts within their respective areas.

D. INTERNAL COMMUNICATIONS (CITY OF CENTENNIAL AND SPECIAL DISTRICTS)

During any severe weather incident, information from briefings and updates will be disseminated by the Public Information Manager to all internal audiences at least two times daily and during the clean-up period afterwards. People to be contacted include City management, elected officials, and special district personnel.

E. EXTERNAL COMMUNICATIONS

- The Arapahoe County Sheriff's Office representative in the Emergency Operations Center (EOC) is responsible for communications with the medical facilities, fire districts, National Guard, and other emergency agencies in the area.
- The Arapahoe County Sheriff's Office may use Reverse 911 for extreme emergencies.
- The City's Public Information Manager or designee will be proactive with metro area media to convey information to the public.

- The City will encourage citizens and businesses to sign up for regular and emergency communications from the City.
- All severe winter storm, reports and updates will be posted on the City's website and will also be transmitted to Arapahoe County, Cherry Creek School District, and Littleton Public School District by the Public Information Manager.
- City staff and the Service Provider will take requests for service and information and track responses to calls and emails.
- During a severe winter storm, the Service Provider will provide accurate and complete updates at least twice a day in a form suitable for uploading to the City's website and for transmission via email.
- School Districts, utilities, and County staff will be responsible for relaying information about their facilities to the City Communications team.

F. WINTER STORM NOTICES

- **Winter Storm Watch** – issued when severe winter weather is possible, including cold air, strong winds and accumulations of snowfall.
- **Winter Storm Warning** – issued when snowfall is expected to exceed six (6) inches in a 12-hour period or eight (8) inches in 24 hours.
- **Blizzard Warning** – issued when severe winter weather with sustained winds of at least 35 mph is expected, along with considerable snowfall.
- **Winter Storm Emergency** – issued when vital community services have been severely impacted. The Mayor/City Council has declared a State of Emergency.

IV. INTERAGENCY PLANS AND COORDINATION

A. STATEMENT OF OBJECTIVES

It is the objective of the City to coordinate with special districts, neighborhood associations, school districts, utilities and local businesses during periods of severe weather emergencies and during the recovery efforts after the storm.

B. SHERIFF'S OFFICE

The Sheriff's Office maintains a list of email contacts to which situational reports are sent while the Emergency Operations Center is operational. After closure of the EOC, the Service Provider is responsible for dissemination of regular updates on the snow and ice control operations. The City will work with the Sheriff's Office to encourage the use of Community Emergency Response Team (CERT) volunteers in the event of a weather emergency or severe snow and ice conditions.

C. NEIGHBORHOOD ASSOCIATIONS AND SCHOOL DISTRICTS

The Public Information Manager for the City has developed a list of neighborhood association contacts. This list will be used to maintain communications and give updates to the neighborhood associations as conditions change.

The neighborhood associations' representatives are encouraged to share information received from the City with the members of their respective associations. Each association is asked to appoint an emergency contact and alternate to be included on this email list.

The City Public Information Manager will contact the Littleton Public School and Cherry Creek School District communication directors and give updates as conditions change.

D. CITY WEBSITE

The City Public Information Manager will make every attempt to keep the City website current. City services such as delivery vehicles, trash haulers, and water and sewer districts are encouraged to check the City website for information on snow and ice control operations.

The City will work with City services, such as fire districts and utility providers to develop programs in assisting locating fire hydrants and utility boxes covered during a snow storm.

E. BUSINESSES

The City suggests that the business community develop internal staged plans for sending employees home in the event of a severe weather emergency. The City encourages the local Chambers of Commerce to communicate with members of their organization and subscribe to the City's website for notifications.

V. VOLUNTEERS, SIDEWALKS, DRIVEWAYS, PARKING AND PRIVATE PLOWING

A. VOLUNTEERS

During a severe snow event, the City will provide information on the City's website, www.centennialco.gov, for volunteers. Needs for volunteers include:

- Four-wheel drive vehicles – private citizens may volunteer to transport essential workers.
- Snow Shoveling –volunteers will be needed to assist senior citizens and citizens with disabilities with their snow removal needs.

B. SIDEWALKS

The City maintains only the public sidewalks delineated on the Sidewalk Snow Removal Maps included in the Appendices. Additional public sidewalks will not be maintained unless the City dedicates additional resources to clear additional public sidewalks of snow.

In the interest of public safety, the City strongly encourages residents and business owners to remove snow from the sidewalks adjoining their property within 24 hours after a snow storm ends. The City encourages the community to take care of one another by clearing sidewalks of neighbors who are unable to clear the sidewalks themselves. Additionally, it is also important that the areas around school bus stops, fire hydrants, power boxes and storm drains be kept cleared and accessible.

Although the City's snowplow operators attempt to keep snow from being plowed onto sidewalks of Priority 3 streets, it may occur and it is the resident's responsibility to clear the snow from the sidewalk. However, crew supervisors and plow operators will be informed of incidents of plowing snow onto residential sidewalks when they are reported. Residents should call the City Call Citizen Response Center at 303.825.8000 to report an incident to the Street Maintenance Field Services Manager.

C. DRIVEWAYS

The City's snowplows will create a windrow of snow across driveways in the normal course of street plowing operations. The City does not have the resources to remove the row of snow and open driveways. The resident, business owner or property owner is responsible for opening driveways that are plowed closed by City snowplows. Snow from plowing driveways or opening driveways shall not be plowed into the street. Placing snow in a public street is a violation that is subject to enforcement by the Sheriff's Office.

D. PARKING ON SNOW ROUTES

The City does not post the snow plowing route streets with "NO PARKING" signs. The Priority 1 snow routes are arterial streets and parking is not permitted on arterial streets. Parking is permitted on Priority 2 snow routes that are residential streets. If a vehicle becomes stuck in a travel lane of a public street, the driver shall take immediate action to have the vehicle towed to a legal parking area. Stalled or abandoned vehicles in travel lanes of Priority 1 and Priority 2 streets will be towed.

The Sheriff's Office will authorize towing of stalled or abandoned vehicles for safe traffic flow and will dispatch a commercial towing company to provide the required assistance. The Sheriff's Office maintains a list of commercial towing companies who have contracts with the County to provide this service.

If a vehicle has been towed, the owner should contact the Arapahoe County Sheriff's Office Dispatcher at 303-795-4711 to determine the location of the vehicle.

E. USE OF PRIVATE CONTRACTORS

The City does not encourage neighborhood associations to use private contractors for snow removal on City streets. Private contractors that plow snow from City streets under a contract with a neighborhood association must obtain a City contractor license at the City Civic Center, 13133 East Arapahoe Road, Centennial, Colorado, 80112, 303-325-8000. Neighborhood associations that use a private contractor for snow and ice control on publicly owned streets will not be reimbursed by the City for any snow and ice expenses incurred by the association. The private contractor will be held responsible for damages to public infrastructure.

Private contractors shall not push or place snow from private property, streets or driveways onto public streets or sidewalks. Placing snow in a public street is a violation that is subject to enforcement by the Sheriff's Office.

Appendices

CITY MANAGEMENT STAFF	
City of Centennial 24-Hour Citizen Response Center	303-325-8000
Interim City Manager, Elisha Thomas	303-754-3327
Deputy City Manager/City Emergency Liaison, Elisha Thomas	303-754-3419
Communications Director, Sheri Chadwick	303-754-3320
Arapahoe County Sheriff, David C. Walcher	720-874-4176

EMERGENCY AGENCIES CONTACT INFORMATION	
Arapahoe County Road and Bridge	720-874-7623
Arapahoe County Sheriff's Office	303-795-4711
Centennial Medical Plaza	303-699-3000
Centennial Airport – Operations Number	303-877-7307
City of Centennial	303-325-8000
Colorado Department of Transportation (CDOT) Information Hotline: Travel Information Center	511 or 303-639-1111
Colorado State Patrol	303-239-4501
Cunningham Fire Protection District	303-755-9202
Littleton Fire Protection District	303-795-3800
CenturyLink Technical Support/Phone Repair TDD/TTY (Speech/Hearing Impaired)	1-877-348-9007 1-800-223-3131
Red Cross	303-722-7474
Regional Transportation District (RTD) TDD/TTY (Speech/Hearing Impaired)	303-299-6000 303-299-6089
SOUTH METRO Fire Rescue Authority	720-989-2000
Xcel Energy Residential Customer Service Electric Emergency/Power Outage Gas Emergency/Gas Oder TDD/TTY (Speech/Hearing Impaired) Business Solutions Center (Mon-Fri, 8am-5pm)	1-800-895-4999 1-800-895-1999 1-800-895-2999 1-800-895-4949 1-800-481-4700

DISTRICT CONTACT LIST

Water and Sanitation Districts

Arapahoe Estates Water District	303-854-8282
Arapahoe County Water and Wastewater (ACWWA)	303-790-4830
Castlewood Water District	303-770-7272
East Cherry Creek Valley Water and Sanitation District	303-693-3800
Havana Water and Sanitation District	303-779-4525
South Arapahoe Sanitation District	303-985-3636
South Englewood Sanitation District #1	303-797-6200
Southeast Englewood Water District	303-986-1551
Southgate Water and Sanitation Districts	303-779-0261
Willows Water District	303-770-8625

Metropolitan Districts

Centennial 25 Metro District	303-758-3500
Chapparal Metropolitan District	303-381-4960
Columbia Metropolitan District	303-987-0835
Dove Valley Metropolitan District	303-987-0835
East Arapahoe Metropolitan District	303-986-1551
East Smoky Hill Metropolitan District #1	303-770-2700
East Valley Metropolitan District	303-841-3474
Greenwood South Metropolitan District	303-867-3002
Heritage Greens Metropolitan District	303-839-3800
Highlands Ranch Metropolitan District	303-779-5710
Interstate South Metropolitan	303-770-2700
Landmark Metropolitan District	303-779-4525
Liverpool Metropolitan District	303-779-5710
Panorama Metropolitan District	303-987-0835

DISTRICT CONTACT LIST
(continued)

Parker Jordan Metro District	303-779-4525
Parkview Metropolitan District	303-985-3636
Piney Creek Metropolitan District	303-946-2015
Piney Creek Village Metropolitan District	303-987-0835
Smoky Hill Metropolitan District	303-693-3414
South Arapahoe Metropolitan District	303-985-3636
Southeast Public Improvement Metropolitan District	303-649-9857
Southgate at Centennial Metropolitan District	303-649-9857
Southglenn Metropolitan District	303-779-4525
Suburban Metropolitan District	303-592-4380
Valley Club Pointe Metropolitan District	303-839-3800
Park and Recreation Districts	
Arapahoe County Open Space	720-874-6540
Arapahoe Park and Recreation District	303-269-8415
South Suburban Park and Recreation District	303-798-5131
Other Districts	
Arapahoe Library District	303-542-7279
Southeast Metro Stormwater Authority (SEMSWA)	303-858-8844

WINTER PREPAREDNESS SAFETY TIPS

Timely preparation, including structural and non-structural mitigation measures to avoid the impacts of severe winter weather, can avert heavy personal, business, and government expenditures. Experts agree that the following measures can be effective in dealing with the challenges of severe winter weather. It should be noted that this list serves to be a helpful tool in preparing for winter weather; it is not intended to be an exhaustive list and may be added to in the future.

Before Severe Weather Arrives

- Store drinking water, first aid kit, canned/no-cook food, prescription medications, non-electric can opener, radio, flashlight and extra batteries where you can get them easily, even in the dark.
- Keep cars and other vehicles fueled and in good repair, with a winter emergency kit in each.
- Get a NOAA Weather Radio to monitor severe weather.
- Know how the public is warned (siren, radio, TV, etc.) and the warning terms for each kind of disaster in your community; e.g.:
 - "winter storm watch" --- Be alert, a storm is likely
 - "winter storm warning" --- Take action, the storm is in or entering the area
 - "blizzard warning" --- Snow and strong winds combined will produce blinding snow, near zero visibility, deep drifts, and life-threatening wind chill--seek refuge immediately!
 - "winter weather advisory" --- Winter weather conditions are expected to cause significant inconveniences and may be hazardous, especially to motorists
 - "frost/freeze warning" --- Below freezing temperatures are expected and may cause damage to plants, crops, or fruit trees
 - "flash flood or flood watch" --- Be alert to signs of flash flooding and be ready to evacuate on a moment's notice
 - "flash flood warning" --- A flash flood is imminent--act quickly to save yourself because you may have only seconds
 - "flood warning" --- Flooding has been reported or is imminent--take necessary precautions at once. Know safe routes from home, work and school to high ground.
- Know how to contact other household members through a common out-of-state contact in the event you and have to evacuate and become separated.
- Know how to turn off gas, electric power and water before evacuating.
- Know ahead of time what you should do to help elderly or disabled friends, neighbors or employees.
- Keep plywood, plastic sheeting, lumber, sandbags and hand tools on hand and accessible.
- Winterize your house, barn, shed or any other structure that may provide shelter for your family, neighbors, livestock or equipment. Install storm shutters, doors and windows; clear rain gutters; repair roof leaks; and check the structural ability of the roof to sustain unusually heavy weight from the accumulation of snow--or water, if drains on flat roofs do not work.
- If you think you might want to volunteer in case of a disaster, now is the time to let voluntary organizations or the emergency services office know--beforehand.

During a Severe Winter Storm

- Monitor your NOAA Weather Radio or keep a local radio and/or TV station on for information and emergency instructions.
- Have your emergency survival kit ready to go if told to evacuate.
- If you go outside for any reason, dress for the season and expected conditions:
- For cold weather, wear several layers of loose-fitting, lightweight, warm clothing rather than one layer of heavy clothing. Outer garments should be tightly woven and water-repellent. Mittens are warmer than gloves. Wear a hat. Cover your mouth with a scarf to protect your lungs from extremely cold air. Wear sturdy, waterproof boots in snow or flooding conditions.
- Conserve fuel, if necessary, by keeping your house cooler than normal. If possible, temporarily shut off heat to less-used rooms.
- If using kerosene heaters, maintain ventilation to avoid build-up of toxic fumes. Keep heaters at least three feet from flammable objects. Refuel kerosene heaters outside.
- Avoid travel if possible. If you must travel, do so during daylight.
- Don't travel alone. Stay on main roads, and keep others informed of your schedule.
- If advised to evacuate, tell others where you are going, turn off utilities if told to do so, and then leave immediately, following routes designated by local officials.

If a Blizzard Traps You in Your Car

- Pull off the road, set hazard lights to flashing, and hang a distress flag from the radio aerial or window. Remain in your vehicle; rescuers are most likely to find you there.
- Conserve fuel, but run the engine and heater about ten minutes each hour to keep warm, cracking a downwind window slightly to prevent carbon monoxide poisoning. Exercise to maintain body heat but don't overexert. Huddle with other passengers and use your coat for a blanket.
- In extreme cold use road maps, seat covers, floor mats, newspapers or extra clothing for covering--anything to provide additional insulation and warmth.
- Turn on the inside dome light so rescue teams can see you at night, but be careful not to run the battery down. In remote areas, spread a large cloth over the snow to attract the attention of rescue planes.
- Do not set out on foot unless you see a building close by where you know you can take shelter.
- Once the blizzard is over, you may need to leave the car and proceed on foot. Follow the road if possible. If you need to walk across open country, use distant points as landmarks to help maintain your sense of direction.

After the Storm

- Report downed power lines and broken gas lines immediately.
- After blizzards, heavy snows or extreme cold, check to see that no physical damage has occurred and that water pipes are functioning. If there are no other problems, wait for streets and roads to be opened before you attempt to drive anywhere.
- Check on neighbors, especially any who might need help.
- Beware of overexertion and exhaustion. Shoveling snow in extreme cold causes many heart attacks. Set your priorities and pace yourself after any disaster that leaves you with a mess to clean up. The natural tendency is to do too much too soon.

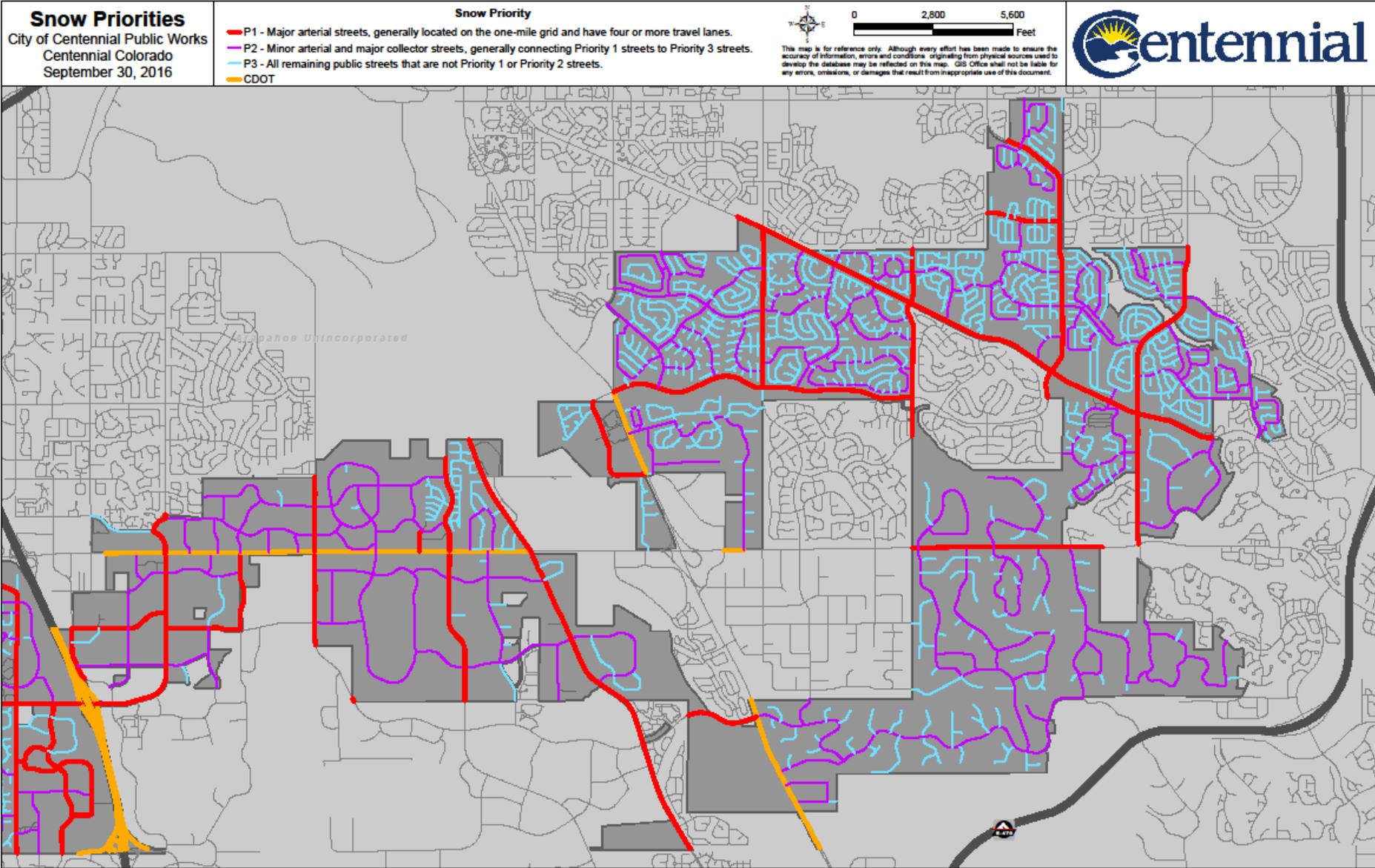
SNOW AND ICE CONTROL ROUTE MAPS

A total of 578 lane miles on the Priority 1 and 2 snow route network, as calculated by travel lane miles, are plowed in the City. Travel lane miles are based on the miles reported in the City's HUTF inventory. There are approximately 278.3 lane miles of Priority 1 streets and 299.1 lanes miles of Priority 2 streets in the City

The lane miles do not include turn lanes or account for the fact that travel lanes are typically 11-12 feet wide and the width of the plowed path is 10 feet. Providing snow removal services on the Priority 1 and 2 streets will result in approximately 98.5% of the parcels in the City being within approximately $\frac{1}{4}$ mile of a Priority 1 or 2 street. The Priority 1 and 2 street networks are delineated on the Priority 1 and 2 Snow Routes maps included in the Appendices.

NOTE: Several streets in the City are state highways; therefore, snow and ice control on these streets is performed by the Colorado Department of Transportation (CDOT) and their mileage is not included in the table. These streets are I-25, Parker Road, University Boulevard, and Arapahoe Road (between I-25 and Parker Road).

PRIORITY SNOW REMOVAL MAPS



Snow Priorities

City of Centennial Public Works
Centennial Colorado
September 30, 2016

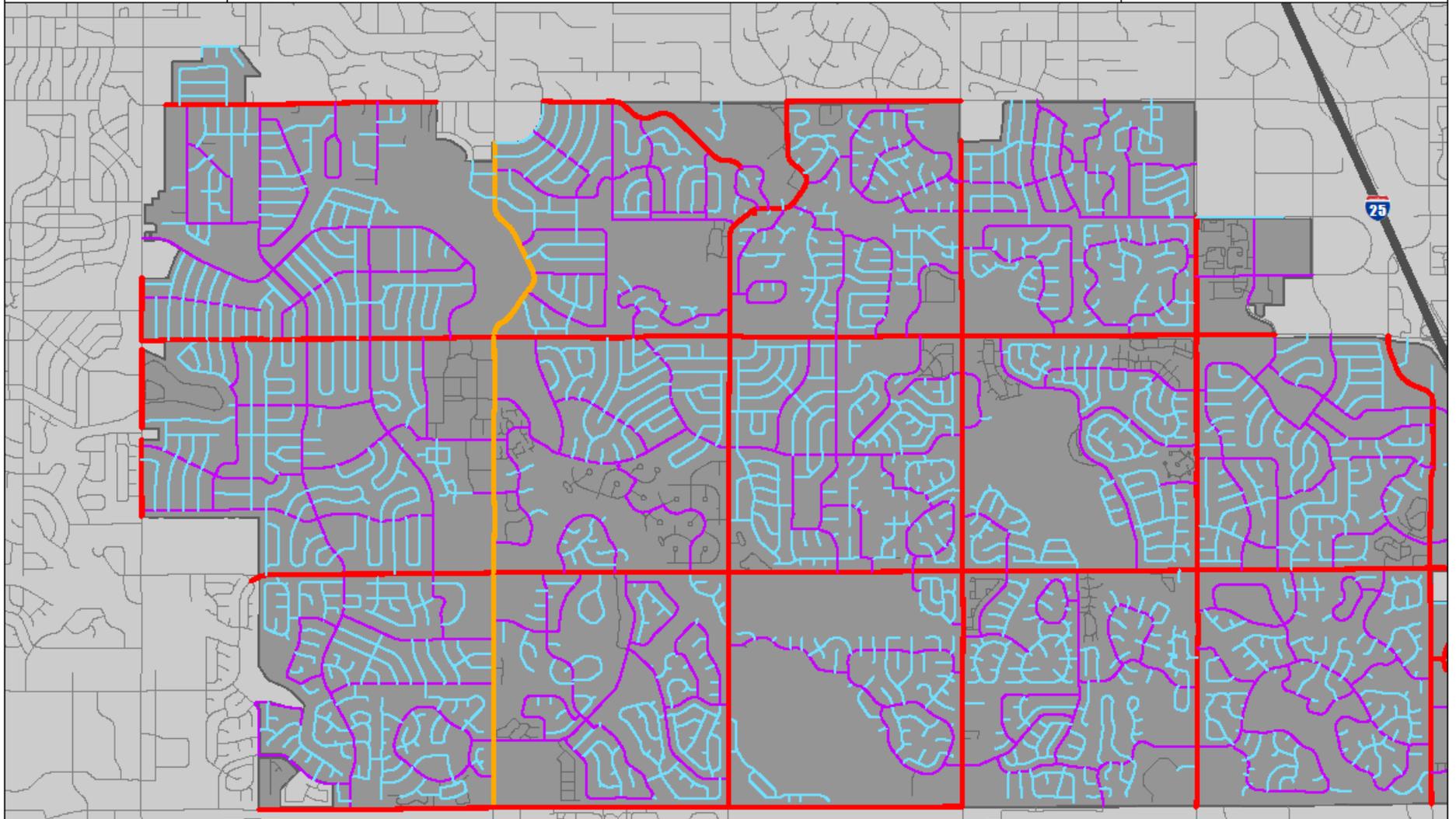
Snow Priority

- P1 - Major arterial streets, generally located on the one-mile grid and have four or more travel lanes.
- P2 - Minor arterial and major collector streets, generally connecting Priority 1 streets to Priority 3 streets.
- P3 - All remaining public streets that are not Priority 1 or Priority 2 streets.
- CDOT



0 1,800 3,600
Feet

This map is for reference only. Although every effort has been made to ensure the accuracy of information, errors and conditions originating from physical sources used to develop the database may be reflected on this map. GIS Office shall not be liable for any errors, omissions, or damages that result from inappropriate use of this document.



G:\CENTENNIAL\MAPFILES\FIELD SERVICES\SNOWS\SNOWPRIORITIES_11X17_BOOK.MXD

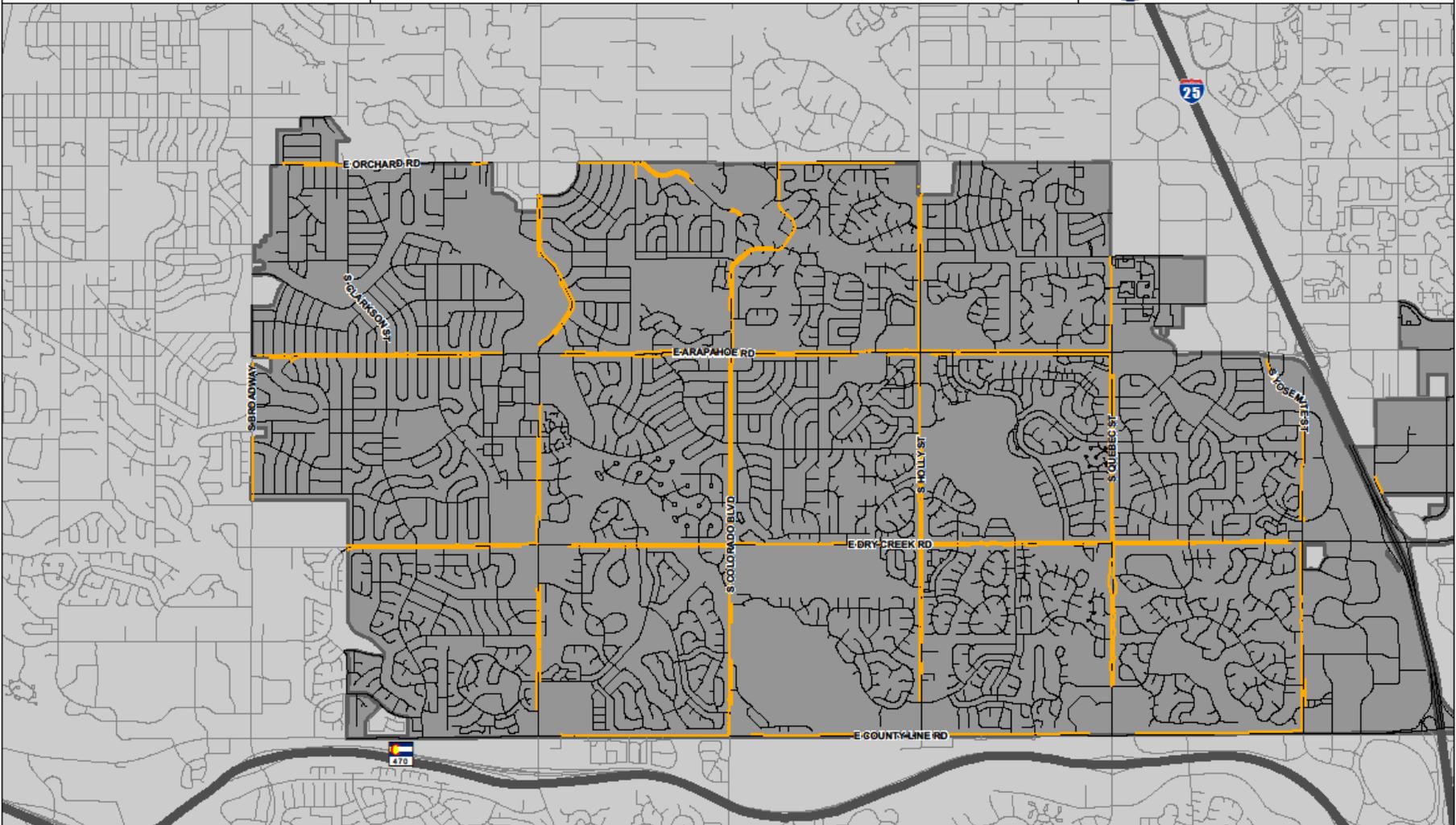
Sidewalk Snow Removal
City of Centennial Public Works
Centennial Colorado
September 30, 2016

Legend
— Sidewalk Snow Removal (63.65 Miles)



0 2,300 4,600
Feet

This map is for reference only. Although every effort has been made to ensure the accuracy of information, errors and conditions originating from physical sources used to develop the database may be reflected on this map. GIS Office shall not be liable for any errors, omissions, or damages that result from inappropriate use of this document.



G:\CENTENNIAL\MAPFILES\FIELDSERVICE\SNOWSIDEWALKSNOWREMOVAL_11X17_BOOK.MXD

**CITY OF CENTENNIAL,
COLORADO**

RESOLUTION NO. 2007-R-126

**A RESOLUTION OF THE CITY COUNCIL FOR THE CITY OF CENTENNIAL
AUTHORIZING THE MAYOR AND THE CITY MANAGER TO APPROVE
CONTRACT EXPENDITURES UP TO A DESIGNATED LIMIT
FOR THE REMOVAL OF SNOW AND ICE FROM CITY STREETS**

WHEREAS, the City of Centennial is authorized to enter into contracts for services necessary to protect the health, safety, and welfare of the residents of the City; and

WHEREAS, the City Council may delegate authority to administrative personnel to accomplish municipal purposes in the protection of the health, safety, and welfare of the City's residents; and

WHEREAS, the City Manager is generally authorized in accordance with Section 2-2-140 of the Centennial Municipal Code to approve contracts up to \$30,000; and

WHEREAS, the City Council desires to best respond in a timely and expedient fashion to unusual weather conditions and to enable management personnel or the Mayor to make available the necessary services and equipment without need for conducting special meetings of the City Council or awaiting the next regularly scheduled meeting of the City Council,

NOW, THEREFORE, BE IT RESOLVED by the City Council of the City of Centennial, as follows:

Section 1. Manager's Authority. The City Council hereby authorizes the City Manager to expend funds and execute on behalf of the City of Centennial contracts and documents necessary to respond to the need for snow or ice removal on public streets and public property provided that all expenditures in the exercise of the authority provided in this Resolution shall not exceed \$150,000 during any 14 day period. The City Manager shall promptly report to the Mayor and all members of the City Council each exercise of the authority granted by this Resolution and the total amount of expenditures during any snow or ice event. In the event of a planned absence by the City Manager from the City during potential snow and ice events, the City Manager may delegate the authority conferred by this Resolution to a designee to act during the City Manager's absence. The City Manager's designation shall be made in writing and a copy shall be delivered to the Mayor and Mayor Pro Tem.

Section 2. Mayoral Authority. The City Council hereby authorizes the Mayor, or in the absence of the Mayor the Mayor Pro Tem, to expend funds and execute on behalf of the City of Centennial contracts and documents necessary to respond to the need for snow or ice removal on public streets and public property provided that all expenditures in the exercise of the authority provided in this Resolution shall not exceed \$150,000 during any 14 day period. The Mayor (or Mayor Pro Tem) shall promptly report to all members of the City Council and to the

City Manager each exercise of the authority granted by this Resolution and the total amount of expenditures during any snow or ice event.

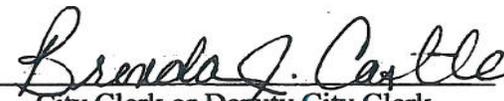
Section 3. This Resolution shall be effective immediately upon adoption.

ADOPTED by a vote of 7 in favor and 0 against, and 0 abstaining, this 17th day of December, 2007.

By: 
Randolph E. Pye, Mayor

ATTEST:

Approved as to Form:

By: 
City Clerk or Deputy City Clerk

By: 
For City Attorney's Office



CITY MANAGER APPROVAL

In accordance with the authority provided by Resolution 2007-R-131 and with the recommendation of the Council Subcommittee for Snow and Ice, I hereby approve the attached City of Centennial Snow and Ice Control Plan dated November, 2016.

December 1, 2016.

By: Elisha Thomas
Elisha Thomas, Interim City Manager