



# **Intra-Sectoral SoP for Heatwave Risk Management in the State of Gujarat**

**Department-wise general guidelines followed by the recommendation of department representatives of the Government of Gujarat**

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# Departmental-wise suggested activities during Heatwave Days

## INTRODUCTION

Extreme heat conditions can have a significant impact on the health and well-being of people in Gujarat. These conditions can increase the risk of heat-related illnesses, such as heat stroke, heat exhaustion, and heat cramps. They can also increase mortality, especially among the elderly, young children, and people with chronic health conditions. Additionally, extreme heat can reduce productivity, damage infrastructure, and increase the risk of fires (Krishnan et al. 2020; Solomon, Intergovernmental Panel on Climate Change, and Intergovernmental Panel on Climate Change 2007).

The health impact of heat-related vulnerability has been widely established in Western countries, however, such literature is scarce in the Indian context. One of the most catastrophic heat-related climatic events is a heat wave, which the US National Oceanic & Atmospheric Administration (NOAA) defines as “a period of abnormally and uncomfortably hot and unusually humid weather lasting two or more days, and advisories are issued when these conditions are forecast.” (Anon n.d.-f; Azhar et al. 2014, 2014; Goma and Phillips 2022)

With time, there is an increase in the frequency and exposure to heat waves in India, which places several regions in India at higher risk of the health impact of such events, for instance, Gujarat. The state lies in arid and semi-arid climatic zones and has experienced several regular heat waves in recent history. A 2014 study on the 2010 heatwave in Ahmedabad predicted that the heatwave was associated with a 41.3% increase in all-cause mortality. Such regions are also more prone to droughts, given their rainfall deficiency and temperature extremes (Anon n.d.-b, Anon n.d.-d, Anon n.d.-e; Goma and Phillips 2022; Krishnan et al. 2020).

The recent 2022 summer in Western India gained a lot of attention due to its major heatwave exposure in an unusual way as early as 11 March. The 'major' and 'severe' heat waves came in six spells: 11-23 March, 27 March-12 April, 17 April-20 April, 23 April-2 May, 7-16 May, and 19-21 May. In northwest India, the average maximum temperature in April 2022 was recorded as the highest at 36.32°C, creating a new record since 2010 (Anon n.d.-a; Raval et al. 2018).

The government of Gujarat has taken some steps to mitigate the effects of extreme heat conditions, but more needs to be done to protect the health and safety of people in Gujarat during these extreme heat conditions. One important step that can be taken is to implement SOPs for heatwave alerts.

SOPs, or standard operating procedures, are a set of instructions that outline how to respond to a particular event or situation. In the case of heat wave alerts, SOPs can help to ensure that government departments are prepared to respond effectively and efficiently.

SOPs can help to mitigate the effects of extreme heat in several ways. For example, SOPs can identify vulnerable populations who are at risk of heat-related illnesses, develop plans for evacuating people from areas that are at risk, provide medical care to people who are affected by heat waves, and communicate with the public about heat waves and how to stay safe. By implementing SOPs for heat wave alerts, the government of Gujarat can help to protect the health and safety of its citizens and mitigate the effects of extreme heat.

## **Call to action**

The Government of Gujarat is encouraged to implement SOPs for heatwave alerts. SOPs can help to mitigate the effects of extreme heat and save lives.

## **Need for the SOP**

The SOP for heat wave alerts in Gujarat will be useful for the state in a number of ways. First, it will help to ensure that all of the relevant departments are aware of their roles and responsibilities during a heat wave alert. This will help to ensure that a coordinated response is put in place and that no one is left behind.

Second, the SOP will provide guidance on the steps that should be taken to mitigate the effects of heat waves. This includes steps such as identifying vulnerable populations, providing medical care, and communicating with the public.

Third, the SOP will help to ensure that the government of Gujarat is prepared for heatwave alerts. This will help to save lives and protect the health and safety of the state's citizens.

Overall, the SOP for heat wave alerts in Gujarat will be a valuable tool for the state. It will help to ensure that the government is prepared for heatwave alerts and that the most effective response is put in place (Anon 2022, Anon n.d.-b, Anon n.d.-c, Anon n.d.-d, Anon n.d.-g).

## **VISION**

This department-wise Heatwave SOP will help create an understanding of extreme heat alerts in different sectors of Gujarat.

This will establish a comprehensive and state-of-the-art Heat Wave Alert Days Management system. Through the implementation of standardized operating procedures (SOPs).

This aims to enhance the capacities of government departments and functionaries, empowering them to effectively respond to extreme heat conditions.

By prioritizing prevention, preparedness, and efficient communication, the SOP aspires to become a premier institute in disaster management, ensuring the safety and resilience of the communities during heat wave events.

This will help in organizing different mitigation strategies across various departments of the state of Gujarat.

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Sl. No	Department		Agency-Responsibilities
1A	Agriculture, Farmers Welfare & Co-Operation Department	Agriculture	<ul style="list-style-type: none"> <li><b>Yellow Alert—Hot Day Advisory</b></li> </ul>
			<ul style="list-style-type: none"> <li>Train field staff to carry cold water to fields and drink it frequently.</li> </ul>
			<ul style="list-style-type: none"> <li>Not to let cattle graze in open fields in the afternoon</li> </ul>
			<ul style="list-style-type: none"> <li>Awareness program to farmers in the local language by local leaders.</li> </ul>
			<ul style="list-style-type: none"> <li>Organize stakeholder meetings and capacity-building programmes for the farmers on heat-related illness and precautionary measures.</li> </ul>
			<ul style="list-style-type: none"> <li><b>Orange Alert—Heat Alert Day</b></li> </ul>
			<ul style="list-style-type: none"> <li>Provide electricity during early morning and/or night.</li> </ul>
			<ul style="list-style-type: none"> <li>Schedule farm activities in the early morning and evening.</li> </ul>
			<ul style="list-style-type: none"> <li>Keep animals in sheds and provide them with water frequently.</li> </ul>
			<ul style="list-style-type: none"> <li><b>Red Alert—Extreme Heat Alert Day</b></li> </ul>
			<ul style="list-style-type: none"> <li>Suspend work in fields in the afternoon hours.</li> </ul>
			<ul style="list-style-type: none"> <li>Drink water, ORS, buttermilk frequently.</li> </ul>
			<ul style="list-style-type: none"> <li>Follow the advisory on heatwave Shelters for livestock and animal husbandry.</li> </ul>
			<ul style="list-style-type: none"> <li>Ensure heat wave warnings, dissemination, and last-mile connectivity.</li> </ul>
1B		Horticulture	<ul style="list-style-type: none"> <li><b>Yellow Alert—Hot Day Advisory</b></li> </ul>
			<ul style="list-style-type: none"> <li>Advise horticulturists/farmers to avoid outdoor work during the peak heat hours (usually from 12 a.m. to 4 p.m.).</li> </ul>
			<ul style="list-style-type: none"> <li>Ensure horticultural activities, such as planting and maintenance, are scheduled during cooler parts of the day (usually from 5 a.m. to 10 a.m.).</li> </ul>
			<ul style="list-style-type: none"> <li>Provide shade structures and encourage the use of sun protection measures such as wide-brimmed hats, sunglasses, and sunscreen.</li> </ul>
			<ul style="list-style-type: none"> <li>Ensure the availability of adequate drinking water and</li> </ul>

1C			electrolyte solutions for horticulturists working in the field.
			<ul style="list-style-type: none"> <li>● Share heat wave safety guidelines with horticulturists/farmers through various communication channels, including WhatsApp messages, posters, VHNDs, and training sessions.</li> </ul>
			<ul style="list-style-type: none"> <li>● Encourage horticulturists/farmers to take regular breaks, seek shade, and drink water frequently.</li> </ul>
			<ul style="list-style-type: none"> <li>● Conduct awareness campaigns to promote heat wave resilience among horticulturists/farmers, emphasizing the importance of personal safety and well-being.</li> </ul>
			<ul style="list-style-type: none"> <li>● <b>Orange Alert—Heat Alert Day</b></li> </ul>
			<ul style="list-style-type: none"> <li>● Establish communication with horticulturists/farmers through various channels, such as SMS alerts and public announcements, to raise awareness about the heat wave and provide safety guidelines.</li> </ul>
			<ul style="list-style-type: none"> <li>● Increase the number of shaded areas and rest spots for horticulturists/farmers working in the field with adequate air passage channels and drinking water supply.</li> </ul>
			<ul style="list-style-type: none"> <li>● Conduct training sessions to educate horticulturists/farmers on recognizing heat-related symptoms in plants and implementing appropriate mitigation strategies.</li> </ul>
			<ul style="list-style-type: none"> <li>● Ensure that horticulturists/farmers are trained in providing primary first aid and respond effectively to heat-related emergencies.</li> </ul>
			<ul style="list-style-type: none"> <li>● <b>Red Alert—Extreme Heat Alert Day</b></li> </ul>
			<ul style="list-style-type: none"> <li>● Avoid outdoor work during the peak heat hours (usually from 11 a.m. to 4 p.m.).</li> </ul>
			<ul style="list-style-type: none"> <li>● Provide drinking water facilities near the fields.</li> </ul>
			<ul style="list-style-type: none"> <li>● Building shelters for the workers to save them direct heat.</li> </ul>
			<ul style="list-style-type: none"> <li>● Provide facilities for first-aid and provision of ORS sachets at the shelter facilities.</li> </ul>
		Fisheries	<ul style="list-style-type: none"> <li>● <b>Yellow Alert—Hot Day Advisory</b></li> </ul>
			<ul style="list-style-type: none"> <li>● Keep updated on all the weather forecasts and updates regarding heat-alert days.</li> </ul>
			<ul style="list-style-type: none"> <li>● Increase communication channels with fishing communities, fisher folk, and stakeholders to disseminate heat wave warnings and safety guidelines.</li> </ul>



			<ul style="list-style-type: none"> <li>● Establish cooling centers near fishing areas with adequate shade, drinking water, and first aid facilities.</li> </ul>
			<ul style="list-style-type: none"> <li>● Ensure the availability of adequate quantities of drinking water and electrolyte solutions for fisherfolk, as dehydration is a common risk during heat waves.</li> </ul>
			<ul style="list-style-type: none"> <li>● Provide appropriate personal protective equipment (PPE) such as wide-brimmed hats, sunglasses, light-coloured clothing, and sunscreen to fisherfolk.</li> </ul>
			<ul style="list-style-type: none"> <li>● Share heat wave safety guidelines with fishing communities through multiple communication channels.</li> </ul>
			<ul style="list-style-type: none"> <li>● Conduct awareness campaigns to promote heat wave resilience among fisherfolk, emphasizing the importance of hydration, rest, and seeking shade.</li> </ul>
			<ul style="list-style-type: none"> <li>● <b>Orange Alert—Heat Alert Day</b></li> </ul>
			<ul style="list-style-type: none"> <li>● Establish the frequency of communication with fishing communities, including SMS alerts and public announcements through local media outlets.</li> </ul>
			<ul style="list-style-type: none"> <li>● Advise the fisheries to avoid fishing between the high heat hours (11 A.M. to 4 P.M.)</li> </ul>
			<ul style="list-style-type: none"> <li>● Conduct training sessions to educate fisherfolk about the signs and symptoms of heat exhaustion and heatstroke and how to respond to emergencies.</li> </ul>
			<ul style="list-style-type: none"> <li>● Implement regular monitoring of fish landing centers and provide first aid training to staff members.</li> </ul>
			<ul style="list-style-type: none"> <li>● <b>Red Alert—Extreme Heat Alert Day</b></li> </ul>
			<ul style="list-style-type: none"> <li>● Encourage fisherfolk to take regular breaks, seek shade, and hydrate frequently.</li> </ul>
			<ul style="list-style-type: none"> <li>● Monitor fish landing centers for signs of heat-related illnesses and provide immediate medical assistance if needed.</li> </ul>
			<ul style="list-style-type: none"> <li>● Coordinate with local health authorities to ensure timely medical support and emergency services during heat wave events.</li> </ul>
2	Animal Husbandry Department		<ul style="list-style-type: none"> <li>● <b>Yellow Alert—Hot Day Advisory</b></li> </ul>
			<ul style="list-style-type: none"> <li>● Hoardings at various animal treatment institutions of the Animal Husbandry Department on how to protect their animals from heatwave.</li> </ul>
			<ul style="list-style-type: none"> <li>● Ensure water supply for livestock.</li> </ul>

			<ul style="list-style-type: none"> <li>● Organise sensitize workshops and training for animal owners to protect their animals during Heatwave from extreme heat.</li> </ul>
			<ul style="list-style-type: none"> <li>● Develop a mechanism to notify heatwave-related cases in animals.</li> </ul>
			<ul style="list-style-type: none"> <li>● Activate field staff to create awareness among the Livestock farmers on Animal Management during Heat waves and print posters and exhibits in the public places of the villages</li> </ul>
			<ul style="list-style-type: none"> <li>● <b>Orange Alert—Heat Alert Day</b></li> </ul>
			<ul style="list-style-type: none"> <li>● Provide information to animal owners regarding heat stress management in animals during extreme heat by distributing pamphlets at rural level</li> </ul>
			<ul style="list-style-type: none"> <li>● Follow the advisory on heatwave Shelter for livestock and animal husbandry should be maintained.</li> </ul>
			<ul style="list-style-type: none"> <li>● <b>Red Alert—Extreme Heat Alert Day</b></li> </ul>
			<ul style="list-style-type: none"> <li>● Ensure heat wave warnings, dissemination, and last-mile connectivity.</li> </ul>
			<ul style="list-style-type: none"> <li>● Inform animal owners about Red Alert by Bulk SMS.</li> </ul>
			<ul style="list-style-type: none"> <li>● Make sure that all veterinary Dispensaries have sufficient stock of medicines required for the treatment of Heat stroke in animals.</li> </ul>
			<ul style="list-style-type: none"> <li>● At field level keep all Dispensaries on Alert mode to provide immediate treatment to animals who become sick due to Heat stroke.</li> </ul>
			<ul style="list-style-type: none"> <li>● Make a control room at Head Office to communicate with field level office.</li> </ul>
			<ul style="list-style-type: none"> <li>● <b>Yellow Alert—Hot Day Advisory</b></li> </ul>
3	Army/ Defence Department		<ul style="list-style-type: none"> <li>● Minimise physical exercises</li> </ul>
			<ul style="list-style-type: none"> <li>● Sensitize heat illness and precaution measures.</li> </ul>
			<ul style="list-style-type: none"> <li>● Provide cool drinking water near physical exercise or drill.</li> </ul>
			<ul style="list-style-type: none"> <li>● Advise taking more fluid like water, nimbu pani, chaas, ORS, etc.</li> </ul>
			<ul style="list-style-type: none"> <li>● Increase in distribution or intake of ORS</li> </ul>



		<ul style="list-style-type: none"> <li>• Use of appropriate clothing according to nature of duty</li> </ul>
		<ul style="list-style-type: none"> <li>• <b>Orange Alert—Heat Alert Day</b></li> </ul>
		<ul style="list-style-type: none"> <li>• Avoiding extreme exercises</li> </ul>
		<ul style="list-style-type: none"> <li>• Avoiding physical activity during mid-day, especially between 12.00 noon and 3.00 p.m.</li> </ul>
		<ul style="list-style-type: none"> <li>• Planning of training/drill/exercise under the shadow area.</li> </ul>
		<ul style="list-style-type: none"> <li>• Insurance of adequate drinking water facilities.</li> </ul>
		<ul style="list-style-type: none"> <li>• <b>Red Alert—Extreme Heat Alert Day</b></li> </ul>
		<ul style="list-style-type: none"> <li>• Avoid work in direct sunlight.</li> </ul>
		<ul style="list-style-type: none"> <li>• Avoid outdoor activities except in emergencies.</li> </ul>
		<ul style="list-style-type: none"> <li>• Schedule strenuous jobs to cooler times of the day.</li> </ul>
		<ul style="list-style-type: none"> <li>• Make provision of water and buttermilk for all staff.</li> </ul>
		<ul style="list-style-type: none"> <li>• Display of messages about RED alerts.</li> </ul>
4	Central Water Commission (CWC)	<ul style="list-style-type: none"> <li>• <b>Yellow Alert—Hot Day Advisory</b></li> </ul>
		<ul style="list-style-type: none"> <li>• Awareness to the public regarding Heat Wave</li> </ul>
		<ul style="list-style-type: none"> <li>• Promote sprinkler irrigation</li> </ul>
		<ul style="list-style-type: none"> <li>• Release water in canals in summer</li> </ul>
		<ul style="list-style-type: none"> <li>• <b>Orange Alert—Heat Alert Day</b></li> </ul>
		<ul style="list-style-type: none"> <li>• Promote sufficient potable water supply</li> </ul>
		<ul style="list-style-type: none"> <li>• Water user associations shall be informed and educated for heatwave.</li> </ul>
		<ul style="list-style-type: none"> <li>• <b>Red Alert—Extreme Heat Alert Day</b></li> </ul>
		<ul style="list-style-type: none"> <li>• Supply drinking water at various locations of the city/village.</li> </ul>
		<ul style="list-style-type: none"> <li>• Arrangements for field workers as well as Farmers/Consumers to avoid doing work during 12 to 4 hrs. of the day.</li> </ul>
5	Climate	<b>Yellow Alert—Hot Day Advisory</b>

	Change Department		<ul style="list-style-type: none"> <li>● Stay updated on weather forecasts and heat wave alerts issued by the local meteorological department and other relevant agencies.</li> </ul>
			<ul style="list-style-type: none"> <li>● Activate a dedicated heat wave response team within the Climate Change Department.</li> </ul>
			<ul style="list-style-type: none"> <li>● Disseminate heat wave warnings and safety guidelines to relevant stakeholders, including government agencies, communities, and vulnerable populations.</li> </ul>
			<ul style="list-style-type: none"> <li>● Collaborate with other departments and agencies to ensure a coordinated response to heatwave events.</li> </ul>
			<ul style="list-style-type: none"> <li>● Establish communication channels to provide real-time updates, advisories, and emergency information to the public.</li> </ul>
			<ul style="list-style-type: none"> <li>● Conduct outreach and education programs to raise awareness about the impacts of heat waves and promote adaptive measures.</li> </ul>
			<ul style="list-style-type: none"> <li>● Collaborate with the health department to monitor heat-related illnesses and provide necessary medical support and emergency services.</li> </ul>
			<ul style="list-style-type: none"> <li>● Share heat wave safety guidelines and advisory information through multiple communication channels to reach a broader audience.</li> </ul>
			<ul style="list-style-type: none"> <li>● Monitor and evaluate the effectiveness of ongoing heat wave resilience initiatives and make necessary adjustments or improvements.</li> </ul>
			<ul style="list-style-type: none"> <li>● Collaborate with research institutions and organizations to enhance data collection and analysis on heat wave impacts and resilience strategies.</li> </ul>
			<ul style="list-style-type: none"> <li>● <b>Orange Alert—Heat Alert Day</b></li> </ul>
			<ul style="list-style-type: none"> <li>● Establish communication and outreach efforts to ensure a wider reach and understanding of heat wave risks and adaptation strategies.</li> </ul>
			<ul style="list-style-type: none"> <li>● Collaborate with relevant departments to monitor the implementation of heat wave resilience measures and provide support where needed.</li> </ul>
			<ul style="list-style-type: none"> <li>● Conduct capacity-building workshops and training programs for government officials and stakeholders to enhance their understanding of heatwave impacts and response strategies.</li> </ul>
			<ul style="list-style-type: none"> <li>● <b>Red Alert—Extreme Heat Alert Day</b></li> </ul>

			<ul style="list-style-type: none"> <li>● Conduct research and analysis to assess the vulnerability of different sectors and communities to heat waves and develop targeted adaptation strategies.</li> </ul>
			<ul style="list-style-type: none"> <li>● Implement heat wave resilience projects, such as urban heat island mitigation, green infrastructure development, and community cooling initiatives.</li> </ul>
			<ul style="list-style-type: none"> <li>● Advocate for policies and regulations that integrate heat wave resilience into urban planning, building codes, and infrastructure development.</li> </ul>
6	Coast Guard		<ul style="list-style-type: none"> <li>● <b>Yellow Alert—Hot Day Advisory</b></li> </ul>
			<ul style="list-style-type: none"> <li>● Ensure drinking sufficient water, use ORS, Lemon water to keep hydrated</li> </ul>
			<ul style="list-style-type: none"> <li>● Wear light colour uniform</li> </ul>
			<ul style="list-style-type: none"> <li>● Cover Head by using Cloth, Hat, and umbrella.</li> </ul>
			<ul style="list-style-type: none"> <li>● Sensitize on heat illness and precaution measures.</li> </ul>
			<ul style="list-style-type: none"> <li>● Provide cool drinking water near physical exercise or drill.</li> </ul>
			<ul style="list-style-type: none"> <li>● <b>Orange Alert—Heat Alert Day</b></li> </ul>
			<ul style="list-style-type: none"> <li>● Stay Indoor office/House as much as possible</li> </ul>
			<ul style="list-style-type: none"> <li>● Avoiding physical activity during mid-day, especially between 12.00 noon and 3.00 p.m.</li> </ul>
			<ul style="list-style-type: none"> <li>● <b>Red Alert—Extreme Heat Alert Day</b></li> </ul>
			<ul style="list-style-type: none"> <li>● Avoid work in direct sunlight.</li> </ul>
			<ul style="list-style-type: none"> <li>● No outdoor activities except in emergencies.</li> </ul>
			<ul style="list-style-type: none"> <li>● Display of messages about RED alerts.</li> </ul>
7	Disaster Management Authority		<ul style="list-style-type: none"> <li>● <b>Yellow Alert—Hot Day Advisory</b></li> </ul>
			<ul style="list-style-type: none"> <li>● Timely coordination and providing awareness and passing information to the relevant and sub-ordinate agencies about heat waves.</li> </ul>
			<ul style="list-style-type: none"> <li>● Checking of the availability of water resources and proper management for its supply</li> </ul>
			<ul style="list-style-type: none"> <li>● Spreading awareness in urban and rural areas about heat waves through the ground level and local authority eg. Talati, Mamlatdar.</li> </ul>

8	District Collectors		<ul style="list-style-type: none"> <li>Organize preventive training and outreach efforts for different departments and stakeholders.</li> </ul>
			<ul style="list-style-type: none"> <li><b>Orange Alert—Heat Alert Day</b></li> </ul>
			<ul style="list-style-type: none"> <li>Issue of press note and awareness through social, digital, and print media.</li> </ul>
			<ul style="list-style-type: none"> <li>Warnings regarding dos and don'ts to prevent heat waves, especially in elderly people and children.</li> </ul>
			<ul style="list-style-type: none"> <li>Follow-up meetings with departments and stakeholders on heat prevention and heat alert.</li> </ul>
			<ul style="list-style-type: none"> <li>Final co-ordinations among various agencies and political parties to counter any upcoming emergency.</li> </ul>
			<ul style="list-style-type: none"> <li><b>Red Alert—Extreme Heat Alert Day</b></li> </ul>
			<ul style="list-style-type: none"> <li>Starting of control room for persons affected due to heat stroke.</li> </ul>
			<ul style="list-style-type: none"> <li>Ensure the hospitals are ready with their emergency services for heat wave-affected persons.</li> </ul>
			<ul style="list-style-type: none"> <li><b>Yellow Alert—Hot Day Advisory</b></li> </ul>
			<ul style="list-style-type: none"> <li>Constitute a District Heat Action Task Force with the District Collector as Chairman with representatives of all departments to be members of this committee.</li> </ul>
			<ul style="list-style-type: none"> <li>Organised Prevention and Mitigation workshops on Heat Illnesses.</li> </ul>
			<ul style="list-style-type: none"> <li>To create an advisory for monitoring all-cause death and all hospital admission during heat season.</li> </ul>
			<ul style="list-style-type: none"> <li>To generate advisory to ensure water supply in the state, Municipal Corporations, Districts, Taluka, and villages.</li> </ul>
			<ul style="list-style-type: none"> <li><b>Orange Alert—Heat Alert Day</b></li> </ul>
			<ul style="list-style-type: none"> <li>General meeting of District Heat Action Task Force.</li> </ul>
			<ul style="list-style-type: none"> <li>To broadcast relevant information regarding heat waves to the public at large.</li> </ul>
			<ul style="list-style-type: none"> <li>To guide, build awareness of Do's and Don'ts in public areas, hospitals, parks, etc.</li> </ul>
			<ul style="list-style-type: none"> <li>Display board with colour coding for heatwave alert.</li> </ul>

			<ul style="list-style-type: none"> <li>● To generate advisory for ensuring the availability of Drinking Water.</li> </ul>
			<ul style="list-style-type: none"> <li>● To generate advisory for ensuring safe shelter for livestock and animals.</li> </ul>
			<ul style="list-style-type: none"> <li>● <b>Red Alert—Extreme Heat Alert Day</b></li> </ul>
			<ul style="list-style-type: none"> <li>● To generate advisory for ensuring the availability of Drinking Water.</li> </ul>
			<ul style="list-style-type: none"> <li>● To generate advisory for ensuring an uninterrupted power supply.</li> </ul>
9	Education Department		<ul style="list-style-type: none"> <li>● <b>Yellow Alert—Hot Day Advisory</b></li> </ul>
			<ul style="list-style-type: none"> <li>● Education Department must re-schedule school timings to avoid hot weather impact.</li> </ul>
			<ul style="list-style-type: none"> <li>● Schools may start early and close before noon or as per the local heat wave alert.</li> </ul>
			<ul style="list-style-type: none"> <li>● Teachers training for awareness on heatwave and its implications.</li> </ul>
			<ul style="list-style-type: none"> <li>● Awareness program for parents/students/staff.</li> </ul>
			<ul style="list-style-type: none"> <li>● Establish one heat illness room with at least one AC or cooler, ORS, and ice packs in each school.</li> </ul>
			<ul style="list-style-type: none"> <li>● <b>Orange Alert—Heat Alert Day</b></li> </ul>
			<ul style="list-style-type: none"> <li>● Re-schedule timing of schools.</li> </ul>
			<ul style="list-style-type: none"> <li>● Give pamphlets to students on the last day of school.</li> </ul>
			<ul style="list-style-type: none"> <li>● Adding at least one chapter on all disaster management in the school curriculum.</li> </ul>
			<ul style="list-style-type: none"> <li>● <b>Red Alert—Extreme Heat Alert Day</b></li> </ul>
			<ul style="list-style-type: none"> <li>● Announce holiday</li> </ul>
			<ul style="list-style-type: none"> <li>● Provide cold buttermilk/ORS in the MDM program as well as in nearby slum areas.</li> </ul>
10	Energy and Petro-chemicals		<ul style="list-style-type: none"> <li>● <b>Yellow Alert—Hot Day Advisory</b></li> </ul>
			<ul style="list-style-type: none"> <li>● Create awareness among people on energy conservation.</li> </ul>

	Department		<ul style="list-style-type: none"> <li>Develop a policy for power cuts depending on vulnerable areas and populations. Power shedding should be cut down/reduced during severe heat (frequency and timing). The timing should be announced before one day.</li> </ul>
			<ul style="list-style-type: none"> <li>Issue heat-related guidelines for workers of the department.</li> </ul>
			<ul style="list-style-type: none"> <li><b>Orange Alert—Heat Alert Day</b></li> </ul>
			<ul style="list-style-type: none"> <li>Keep Power supply available throughout the day to all residential consumers and vulnerable areas.</li> </ul>
			<ul style="list-style-type: none"> <li>Make arrangements for quick response to the fault to restore power immediately</li> </ul>
			<ul style="list-style-type: none"> <li>Keep sufficient equipment and material for replacement of faulty equipment due to heat effect.</li> </ul>
			<ul style="list-style-type: none"> <li><b>Red Alert—Extreme Heat Alert Day</b></li> </ul>
			<ul style="list-style-type: none"> <li>Deploy all the staff on duty.</li> </ul>
			<ul style="list-style-type: none"> <li>No power cuts during a red alert.</li> </ul>
11 A	Forests and Environment	Wildlife and Forests, Natural Parks & Wildlife Sanctuaries	<ul style="list-style-type: none"> <li><b>Yellow Alert—Hot Day Advisory</b></li> </ul>
			<ul style="list-style-type: none"> <li>Share heat wave safety guidelines and advisory information with field staff, local communities, and visitors through multiple communication channels.</li> </ul>
			<ul style="list-style-type: none"> <li>Monitor and evaluate the effectiveness of ongoing heat wave resilience measures, including water management and fire prevention activities.</li> </ul>
			<ul style="list-style-type: none"> <li>Conduct awareness campaigns to educate visitors and local communities about responsible behavior in wildlife areas during heat waves.</li> </ul>
			<ul style="list-style-type: none"> <li><b>Orange Alert—Heat Alert Day</b></li> </ul>
			<ul style="list-style-type: none"> <li>Establish communication with field staff, local communities, and visitors through various channels to raise awareness about heat wave risks and safety measures.</li> </ul>
			<ul style="list-style-type: none"> <li>Conduct regular assessments of water sources and implement water management strategies to ensure availability for wildlife during heat wave events.</li> </ul>
			<ul style="list-style-type: none"> <li><b>Red Alert—Extreme Heat Alert Day</b></li> </ul>

11 B			<ul style="list-style-type: none"> <li>Strengthen fire management and prevention activities, including increased fire line clearing, early detection systems, and rapid response protocols.</li> </ul>
		Eco-Tourism	<ul style="list-style-type: none"> <li><b>Yellow Alert—Hot Day Advisory</b></li> </ul>
			<ul style="list-style-type: none"> <li>Stay updated on weather forecasts and heat wave alerts issued by the local meteorological department.</li> </ul>
			<ul style="list-style-type: none"> <li>Communicate heat wave warnings and safety guidelines to eco-tourism operators, guides, and visitors.</li> </ul>
			<ul style="list-style-type: none"> <li>Advise operators to adjust tour itineraries to avoid peak heat hours and minimize physical exertion during hot weather.</li> </ul>
			<ul style="list-style-type: none"> <li>Ensure availability of shaded areas, drinking water, and first aid facilities at eco-tourism sites.</li> </ul>
12	Gujarat Information Department (State Govt. Official Media)		<ul style="list-style-type: none"> <li>Educate eco-tourism staff and guides on recognizing signs of heat stress in visitors and providing appropriate assistance.</li> </ul>
			<ul style="list-style-type: none"> <li><b>Yellow Alert—Hot Day Advisory</b></li> </ul>
			<ul style="list-style-type: none"> <li>To provide weather forecast and related information to all media outlets in coordination with IMD (around a network of almost 3000 media representatives)</li> </ul>
			<ul style="list-style-type: none"> <li>Media training workshop on heat wave prevention and heat alert.</li> </ul>
			<ul style="list-style-type: none"> <li><b>Orange Alert—Heat Alert Day</b></li> </ul>
			<ul style="list-style-type: none"> <li>Media contributes in preparedness and disaster mitigation and acts as an effective channel for spreading disaster awareness.</li> </ul>
			<ul style="list-style-type: none"> <li>Sharing updates and spreading awareness using print and electronic media on a large scale.</li> </ul>
			<ul style="list-style-type: none"> <li>Rolling social media campaign to aware public of the heat wave. Social media has emerged as a new way through which profound aid can be sought during disasters. With its effective usage, there is a huge potential to create an impact on the society.</li> </ul>
			<ul style="list-style-type: none"> <li>Media may be crucial to an effective warning process.</li> </ul>
			<ul style="list-style-type: none"> <li><b>Red Alert—Extreme Heat Alert Day</b></li> </ul>
			<ul style="list-style-type: none"> <li>Monitoring and providing insights into the situation. Provide information and advice to victims and others.</li> </ul>
			<ul style="list-style-type: none"> <li>Media also can help to activate the local disaster response.</li> </ul>



			<ul style="list-style-type: none"> <li>● Publish a Special article or video about dos and don'ts</li> <li>● WhatsApp and telegram messages to warn the public about the heat wave.</li> <li>● Inform all citizens about RED alert.</li> </ul>
13	Gujarat State Road Transport Corporation		<ul style="list-style-type: none"> <li>● <b>Yellow Alert—Hot Day Advisory</b></li> <li>● Ensure availability of cool drinking water, ORS at the Bus Station</li> <li>● Incorporate cool roof (applying reflection paint on the roof) in bus stand or public waiting area.</li> <li>● Distribute pamphlets/posters on heat-related illness prevention; Do's and don'ts for display &amp; further distribution to passengers at Bus stations, bus shelters, cab, and auto stands, etc.</li> <li>● <b>Orange Alert—Heat Alert Day</b></li> <li>● Display heat warning messages at bus stations, bus shelters, cab or auto stands.</li> <li>● Increase heat wave awareness at the Bus station.</li> <li>● Provide ORS, cool drinking water, ice packets, etc., and medical services in bus stations.</li> <li>● Provision of Spare wheel to guard against an increase in tire puncture rate in hot weather</li> <li>● <b>Red Alert—Extreme Heat Alert Day</b></li> <li>● Display of messages inside the bus on the TV screen about RED alert.</li> <li>● Fire Exhibition water, sand, and the emergency system for Diesel pump vigilance</li> </ul>
14	Health and Family Welfare Department		<ul style="list-style-type: none"> <li>● <b>Yellow Alert—Hot Day Advisory</b></li> <li>● Conduct capacity building and training on heat illness for medical staff/nursing staff, paramedics/link workers at local hospitals and Urban Health Centers (UHCs)</li> <li>● Set up a heatstroke ward in Hospitals and UHCs with AC or coolers, IV fluids, lifesaving medicines and ice packs.</li> <li>● Train hospitals and UHCs to update their admissions and emergency case records to track heat-related morbidity and</li> </ul>

			mortality.
			<ul style="list-style-type: none"> <li>● Train hospitals to improve recording of cause of</li> </ul>
			<ul style="list-style-type: none"> <li>● death certificates.</li> </ul>
			<ul style="list-style-type: none"> <li>● Create simple, user-friendly means to track daily heat-related data and behavioral change impacts.</li> </ul>
			<ul style="list-style-type: none"> <li>● Advisory for Dos and Don'ts for Heatwave situation.</li> </ul>
			<ul style="list-style-type: none"> <li>● Organize training on recording information education &amp; communication (IEC) efforts.</li> </ul>
			<ul style="list-style-type: none"> <li>● <b>Orange Alert—Heat Alert Day</b></li> </ul>
			<ul style="list-style-type: none"> <li>● Distribution of ORS in heat-affected Zones</li> </ul>
			<ul style="list-style-type: none"> <li>● Purchase and distribute reusable soft plastic ice packs for the citywide UHCs, 108 emergency centers, ambulances, and hospitals.</li> </ul>
			<ul style="list-style-type: none"> <li>● Providing sufficient ambulances and 108 kinds of facilities for quick response for the heatwave-affected persons.</li> </ul>
			<ul style="list-style-type: none"> <li>● Visit all the risk populations for prevention and monitoring</li> </ul>
			<ul style="list-style-type: none"> <li>● <b>Red Alert—Extreme Heat Alert Day</b></li> </ul>
			<ul style="list-style-type: none"> <li>● Keep all emergency/special wards ready to tackle heat wave emergencies with sufficient stock of medicines, IV fluids, and ice packs.</li> </ul>
			<ul style="list-style-type: none"> <li>● Keep all the UHCs and health facilities functional till 7 PM</li> </ul>
			<ul style="list-style-type: none"> <li>● Adopt heat-related illness treatment and prevention protocols.</li> </ul>
			<ul style="list-style-type: none"> <li>● Increase link worker and community health worker outreach in at-risk neighborhoods during a heat alert, if feasible.</li> </ul>
15	Industries and Mines Department		<ul style="list-style-type: none"> <li>● <b>Yellow Alert—Hot Day Advisory</b></li> </ul>
			<ul style="list-style-type: none"> <li>● Activate a dedicated heat wave response team within the Industries and Mines Department.</li> </ul>
			<ul style="list-style-type: none"> <li>● Conduct training sessions to educate workers and management about the signs and symptoms of heat-related illnesses and how to respond to emergencies.</li> </ul>

			<ul style="list-style-type: none"> <li>● Share heat wave safety guidelines and advisory information with industries and mines through multiple communication channels.</li> </ul>
			<ul style="list-style-type: none"> <li>● Conduct awareness campaigns to promote heat wave resilience among workers and management, emphasizing the importance of rest, hydration, and seeking shade.</li> </ul>
			<ul style="list-style-type: none"> <li>● <b>Orange Alert—Heat Alert Day</b></li> </ul>
			<ul style="list-style-type: none"> <li>● Establish communication with industries and mines through various channels to raise awareness about heat wave risks and safety measures.</li> </ul>
			<ul style="list-style-type: none"> <li>● Conduct regular inspections and audits to assess the implementation and effectiveness of heat stress management plans in industries and mines.</li> </ul>
			<ul style="list-style-type: none"> <li>● Encourage industries to implement additional measures such as engineering controls, personal protective equipment, and regular worker monitoring during high-temperature conditions.</li> </ul>
			<ul style="list-style-type: none"> <li>● <b>Red Alert—Extreme Heat Alert Day</b></li> </ul>
			<ul style="list-style-type: none"> <li>● Coordinate with local health authorities to ensure access to medical support and emergency services during heat wave events.</li> </ul>
			<ul style="list-style-type: none"> <li>● Monitor air quality and take necessary measures to reduce emissions and pollutants that exacerbate the impact of heat waves.</li> </ul>
			<ul style="list-style-type: none"> <li>● Promote energy conservation and efficiency measures in industries to reduce heat generation and minimize the overall heat island effect.</li> </ul>
16	Labour, Skill Development and Employment Department		<ul style="list-style-type: none"> <li>● Encourage industries to provide adequate drinking water and electrolyte solutions for workers to prevent dehydration.</li> </ul>
			<ul style="list-style-type: none"> <li>● <b>Yellow Alert—Hot Day Advisory</b></li> </ul>
			<ul style="list-style-type: none"> <li>● Train a dedicated heat wave response team within the Labor, Skill Development, and Employment Department.</li> </ul>
			<ul style="list-style-type: none"> <li>● Disseminate heat wave warnings and safety guidelines to employers, workers, and relevant stakeholders.</li> </ul>
			<ul style="list-style-type: none"> <li>● Conduct inspections of workplaces to ensure compliance with heat wave safety measures, including proper air passage, access to drinking water, and shaded rest areas.</li> </ul>

			<ul style="list-style-type: none"> <li>● Share heat wave safety guidelines and advisory information with employers and workers through multiple communication channels.</li> </ul>
			<ul style="list-style-type: none"> <li>● Conduct training sessions for employers and workers on recognizing the signs and symptoms of heat-related illnesses and how to respond to emergencies.</li> </ul>
			<ul style="list-style-type: none"> <li>● <b>Orange Alert—Heat Alert Day</b></li> </ul>
			<ul style="list-style-type: none"> <li>● Establish communication with employers, workers, and industry associations through various channels to raise awareness about heat wave risks and safety measures.</li> </ul>
			<ul style="list-style-type: none"> <li>● Conduct targeted outreach programs to vulnerable sectors, such as outdoor construction and agricultural workers, to ensure they are aware of the risks and preventive measures.</li> </ul>
			<ul style="list-style-type: none"> <li>● Collaborate with vocational training institutions to integrate heat stress management into relevant training programs.</li> </ul>
			<ul style="list-style-type: none"> <li>● Advise employers to implement heat stress management plans, including adjusting work schedules to avoid peak heat hours and ensure adequate breaks during working hours.</li> </ul>
			<ul style="list-style-type: none"> <li>● <b>Red Alert—Extreme Heat Alert Day</b></li> </ul>
			<ul style="list-style-type: none"> <li>● Provide guidance and resources to employers and workers on adapting work processes and practices to minimize heat-related risks.</li> </ul>
			<ul style="list-style-type: none"> <li>● Monitor workplaces for heat-related incidents and ensure immediate medical assistance is available if needed.</li> </ul>
17	Narmada Water Resources, Water Supply and Kalpsar Department		<ul style="list-style-type: none"> <li>● Coordinate with local health authorities to ensure access to medical support and emergency services.</li> </ul>
			<ul style="list-style-type: none"> <li>● <b>Yellow Alert—Hot Day Advisory</b></li> </ul>
			<ul style="list-style-type: none"> <li>● Awareness to the public regarding Heat Wave</li> </ul>
			<ul style="list-style-type: none"> <li>● Promote sprinkler irrigation.</li> </ul>
			<ul style="list-style-type: none"> <li>● Release water in canals in summer.</li> </ul>
			<ul style="list-style-type: none"> <li>● Awareness to Field workers about the increasing temperature to avoid working in peak hours...</li> </ul>
			<ul style="list-style-type: none"> <li>● <b>Orange Alert—Heat Alert Day</b></li> </ul>
			<ul style="list-style-type: none"> <li>● Promote sufficient potable water supply.</li> </ul>

			<ul style="list-style-type: none"> <li>Water user associations shall be informed and educated about heat waves.</li> </ul>
			<ul style="list-style-type: none"> <li><b>Red Alert—Extreme Heat Alert Day</b></li> </ul>
			<ul style="list-style-type: none"> <li>Supply drinking water at various locations of the city/village.</li> </ul>
			<ul style="list-style-type: none"> <li>Arrangement for field workers as well as Farmers/Consumers to avoid doing work during 12 to 4 hrs. of the day</li> </ul>
			<ul style="list-style-type: none"> <li>Avoiding work by Engineers and field staff during peak hours.</li> </ul>
18	National Disaster Response Force (NDRF)		<ul style="list-style-type: none"> <li><b>Yellow Alert—Hot Day Advisory</b></li> </ul>
			<ul style="list-style-type: none"> <li>Intensive training to mitigate any heat-related disaster.</li> </ul>
			<ul style="list-style-type: none"> <li>Arrange mock exercises.</li> </ul>
			<ul style="list-style-type: none"> <li>Conduct awareness through CAP, CCB</li> </ul>
			<ul style="list-style-type: none"> <li>Identify at-risk areas of vulnerable populations.</li> </ul>
			<ul style="list-style-type: none"> <li>Keep sufficient stocks of reusable soft plastic ice packs and ORS.</li> </ul>
			<ul style="list-style-type: none"> <li><b>Orange Alert—Heat Alert Day</b></li> </ul>
			<ul style="list-style-type: none"> <li>Pre-position/induction on forecast.</li> </ul>
			<ul style="list-style-type: none"> <li>Close co-ordination with administration.</li> </ul>
			<ul style="list-style-type: none"> <li>Organize training on recording information education &amp; communication (IEC) efforts.</li> </ul>
			<ul style="list-style-type: none"> <li><b>Red Alert—Extreme Heat Alert Day</b></li> </ul>
			<ul style="list-style-type: none"> <li>Deployment of teams in consultation with the administration.</li> </ul>
			<ul style="list-style-type: none"> <li>Restoration of normalcy in consultation with experts.</li> </ul>
			<ul style="list-style-type: none"> <li>Disseminate SMS text messages to warn local residents during a heat alert.</li> </ul>
19	Panchayats and Rural housing Department		<ul style="list-style-type: none"> <li><b>Yellow Alert—Hot Day Advisory</b></li> </ul>
			<ul style="list-style-type: none"> <li>Train all members during the Panchayats, Gram Sabhas for the Heatwave safety guidelines.</li> </ul>
			<ul style="list-style-type: none"> <li>Collaborate with relevant departments and organizations to ensure the availability of safe drinking water and adequate sanitation facilities in rural areas.</li> </ul>

			<ul style="list-style-type: none"> <li>Identify and target vulnerable populations, such as the elderly, children, and marginalized groups, and develop targeted interventions to support them during heat wave events.</li> </ul>
			<ul style="list-style-type: none"> <li>Construct cooling centers, shading structures, and water conservation initiatives.</li> </ul>
			<ul style="list-style-type: none"> <li>Conduct regular monitoring and inspections of rural housing to ensure proper ventilation, insulation, and access to cooling mechanisms.</li> </ul>
			<ul style="list-style-type: none"> <li>Share heat wave safety guidelines and advisory information with Panchayats, Gram Sabhas, and rural communities through multiple communication channels.</li> </ul>
			<ul style="list-style-type: none"> <li>Conduct awareness campaigns to promote heat wave resilience among community members, emphasizing the importance of hydration, rest, and seeking shade.</li> </ul>
			<ul style="list-style-type: none"> <li><b>Orange Alert—Heat Alert Day</b></li> </ul>
			<ul style="list-style-type: none"> <li>Facilitate training programs for community members on heat stress management, including first aid training and identifying heat-related illnesses.</li> </ul>
			<ul style="list-style-type: none"> <li><b>Red Alert—Extreme Heat Alert Day</b></li> </ul>
			<ul style="list-style-type: none"> <li>Promote community-based initiatives, such as tree planting and the development of green spaces, to mitigate the heat island effect and improve local microclimates.</li> </ul>
			<ul style="list-style-type: none"> <li>Coordinate with health authorities to provide medical support, emergency services, and necessary healthcare facilities during heat wave events.</li> </ul>
20	Port Department		<ul style="list-style-type: none"> <li><b>Yellow Alert—Hot Day Advisory</b></li> </ul>
			<ul style="list-style-type: none"> <li>Training and awareness program to workers of port operations.</li> </ul>
			<ul style="list-style-type: none"> <li>Communicating alerts to port users through bulk SMS and PA system.</li> </ul>
			<ul style="list-style-type: none"> <li>Provide a cap to everyone working at Port.</li> </ul>
			<ul style="list-style-type: none"> <li><b>Orange Alert—Heat Alert Day</b></li> </ul>
			<ul style="list-style-type: none"> <li>Including disaster management topic in toolbox training.</li> </ul>
			<ul style="list-style-type: none"> <li>Increase drinking water facilities at multiple locations in Port.</li> </ul>
			<ul style="list-style-type: none"> <li>Establish and use of Sheds/restrooms in the Port area.</li> </ul>

			<ul style="list-style-type: none"> <li>Plant more trees and improve greenery in Port.</li> </ul>
			<ul style="list-style-type: none"> <li><b>Red Alert—Extreme Heat Alert Day</b></li> </ul>
			<ul style="list-style-type: none"> <li>Suspension of port operations during peak temp. hours.</li> </ul>
			<ul style="list-style-type: none"> <li>Carrying out Port operations by workers on a rotational basis.</li> </ul>
			<ul style="list-style-type: none"> <li>Sprinkling water on internal roads to reduce ambient temp.</li> </ul>
			<ul style="list-style-type: none"> <li>Providing ORS while issuing gate pass.</li> </ul>
21	Revenue Department		<ul style="list-style-type: none"> <li><b>Yellow Alert—Hot Day Advisory</b></li> </ul>
			<ul style="list-style-type: none"> <li>Keep open all the Garden/Shelter houses/Temples for resting the people during noon time.</li> </ul>
			<ul style="list-style-type: none"> <li>Vulnerability assessment of the district with special reference to socioeconomic profile, and population data Housing typology, Vulnerable occupation pattern, chronic disease, and past instances of heat wave cases.</li> </ul>
			<ul style="list-style-type: none"> <li>Identify existing capacity to manage heat wave impact.</li> </ul>
			<ul style="list-style-type: none"> <li>Issue heat-related guidelines for workers of the department.</li> </ul>
			<ul style="list-style-type: none"> <li><b>Orange Alert—Heat Alert Day</b></li> </ul>
			<ul style="list-style-type: none"> <li>Additional communication facilities are to be provided to the people for Power failure complaints, and health-related complaints.</li> </ul>
			<ul style="list-style-type: none"> <li><b>Red Alert—Extreme Heat Alert Day</b></li> </ul>
			<ul style="list-style-type: none"> <li>Declaration for relaxation to laborers for doing continuous hard work doing 12noon to 4 PM.</li> </ul>
			<ul style="list-style-type: none"> <li>Review meetings with staff on heat-related emergencies.</li> </ul>
			<ul style="list-style-type: none"> <li>Display of messages about RED alerts.</li> </ul>
22	Urban Development Department		<ul style="list-style-type: none"> <li><b>Yellow Alert—Hot Day Advisory</b></li> </ul>
			<ul style="list-style-type: none"> <li>Flexibility to the traffic signal timing and management of traffic such that no one should stop in direct heat.</li> </ul>
			<ul style="list-style-type: none"> <li>Identify Blocks and Urban Local Bodies falling under the heat wave forecast.</li> </ul>
			<ul style="list-style-type: none"> <li>Disseminate heatwave forecast to Blocks and Urban Local Bodies.</li> </ul>



			<ul style="list-style-type: none"> <li>● <b>Orange Alert—Heat Alert Day</b></li> </ul>
			<ul style="list-style-type: none"> <li>● Additional communication facilities are to be provided to the people for Power failure complaints, and health-related complaints.</li> </ul>
			<ul style="list-style-type: none"> <li>● Disseminate Heatwave forecast to the public through social media, Local Cable TV Networks, FM, and Community Radio.</li> </ul>
			<ul style="list-style-type: none"> <li>● <b>Red Alert—Extreme Heat Alert Day</b></li> </ul>
			<ul style="list-style-type: none"> <li>● Deploy all the staff on duty.</li> </ul>
			<ul style="list-style-type: none"> <li>● Follow-up meetings with staff on Preparedness and Response to Heatwave.</li> </ul>
			<ul style="list-style-type: none"> <li>● Display of messages about RED alerts.</li> </ul>

Note: The above-developed SoP is ready for reference use and further modifications and/or addendum is to be made, if necessary.



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