

## Severn Sound

Environmental Association

INVESTIGATION OF WATER QUALITY OF BEACHES ON THE COAST OF THE TOWNSHIP OF TINY FINAL REPORT 2003-2007


September 2008

# INVESTIGATION OF WATER QUALITY OF BEACHES ON THE COAST OF THE TOWNSHIP OF TINY <br> FINAL REPORT 2003-2007 

Prepared for the Corporation of the Township of Tiny
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## FOREWORD

This Report was prepared for the Corporation of the Township of Tiny and provides information on several years of investigation into the factors affecting the quality of selected beaches along the coast of the Township. Although the report received technical review, this does not necessarily mean that the contents reflect the views and policies of the Township, the Simcoe-Muskoka Health Unit or of the Ontario Ministry of the Environment.

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The following people contributed to the investigations from 2003 to 2007.

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## Summary

Over the period 2003 to 2007, the Township of Tiny has requested the Severn Sound Environmental Association (SSEA) investigate sources of E. coli and the factors affecting beach quality at selected beaches along the coast of the Township. These investigations have included consideration of factors leading to elevated levels of E. coli at beaches. In addition to monitoring E. coli, investigations have also included measurements of physical and chemical status of area streams flowing into the beach areas.

The purposes of this report are to:

1. summarize the past investigations of SSEA and present the results of 2007 SSEA field work
2. discuss the potential sources of contamination to the beaches
3. provide the Township with management recommendations dealing with sources of E. coli to municipal beaches

The study area over the period 2003 to 2007 has included selected beaches and associated sub-watersheds draining to them. These beaches included Balm Beach, Jackson Park Beach and Woodland Beach. In addition, the quality of Lafontaine Creek from headwaters to the mouth was investigated during 2005 to 2007. Other streams flowing to the Bay were also sampled at locations near the stream mouth during 2007.

## Conclusions

1. Based on the Health Unit analysis of routine monitoring data, the proportion of days the beach samples exceed 100 E.coli relates to rain events, rough windy weather and elevated turbidity. Preceding rain events were more likely to result in exceedences, however, several days of exceedances occurred without associated rain events within the previous 24 hours, suggesting that factors other than rain events alone may relate to elevated bacteria levels. Routine weekly monitoring of Beaches provides limited monitoring of the effect of rain events on streams flowing into the beach. The SSEA event-related sampling survey of 2003 provided a more direct relationship to beach quality during rain events. It should be noted that rain events are normally accompanied by high winds and turbidity and so these factors can be interrelated.
2. Sources of E.coli impacting Township of Tiny beaches include: streams flowing onto the beach, faulty or substandard private sewage systems, urban runoff, water birds, foreshore sand on the beaches and other potential watershed sources. The sampling of stream mouth stations during dry weather has shown that the streams continue to be a source of elevated E. coli densities. More than half of the streams sampled were carrying greater than 100 E . coli/100ml into the coastal waters during dry weather. Station BW1 was an intermittent drain outfall that had a high dry weather sample of $1,400 \mathrm{E}$. coli/ 100 ml , indicating potential sources of pollution were entering the drain. Based on previous surveys by SSEA (2003) and by Crowe (in prep.), it is expected that all of these streams represent sources of elevated E. coli during rain events. This means that the streams, especially
those discharging directly into beach areas (such as Balm Beach Creek, Jackson Park Creek and Lafontaine Creek) should be considered sources of bacteria to the beaches. The year to year results of dry weather sampling (Table 2) suggest that there may be some improvement in the levels of E. coli, especially at Balm Beach Creek and Little Balm Beach Creek.
3. Other factors that may influence the elevation of E. coli levels in Township of Tiny beaches include: the degree of sheltering of the beach especially through artificial structures such as groynes; water bird pollution of beaches; modified or natural "wet beaches" that encourage the growth of wetland plants and/or turf grass. The swash zone accumulation of bacteria that can be released to the water column during rough weather is also a mechanism that may contribute to beach contamination. The orientation of beaches and the degree of sheltering may be a natural "fact of life" for most of the beaches along the coast of the Township. Where artificial structures (groynes) have been put in place, it may be possible to improve exchange by modifying or removing them, thereby improving quality for swimming.
4. A series of actions can be taken to reduce or control sources of bacterial contamination. If done in an integrated fashion, it may be possible to reduce the number of sample days where exceedance of the provincial objective for E. coli occurs.

## Recommended Action

1. Continue to inspect and abate faulty or substandard private sewage systems.
2. Consider treatment of stormwater runoff to provide retention and reduction of solids and bacteria prior to discharge near beaches. A review of stormwater treatment options for Balm Beach should be carried out to identify options for stormwater treatment of runoff prior to discharge to the beach.
3. Consider moving the stream outlets discharging directly onto beaches. The feasibility of moving the outlet of Balm Beach Creek and Jackson Park Creek off the Beaches should be investigated. Where feasible these outlets should be directed off the points where dispersion and mixing of their discharge would be accomplished more effectively and the concentration of their discharge on beaches would be reduced or eliminated.
4. The drain represented by Station BW1 should be further investigated for sources of pollution and followed up with corrective action as necessary.
5. Measures to reduce soil erosion and stream bank erosion through maintenance and establishment of natural vegetation buffers should be pursued for watersheds such as Lafontaine Creek. This could be carried out through enhancement of the Severn Sound Healthy Streams Program in cooperation with the Environmental Farm Plan Program which encourages the implementation of stream buffers and other farm best management practices to reduce pollution sources.
6. Consider removal or modification of selected groynes in order to improve water circulation in stagnant beach areas, especially in the case of beaches in the Lafontaine area or further north along the coast. Discussions with the Department of Fisheries and Oceans should take place to integrate any actions with fish habitat protection.
7. Prepare shoreline landowner guides that include care of sewage systems, the value of dune systems to beach quality and the value of naturalization rather that the development of turf grass next to beaches. Measures to protect public beach areas from modification by adjacent landowners should be pursued by the Township.
8. The Township should be aware of and comment on any proposals to modify the mouth of the Nottawasaga River in order to protect the beaches in the southern coast of the Township from further regional adverse effects of the River discharge.

## Introduction

Fecal contamination of beaches can present significant public health risks, loss of recreational opportunities and adverse economic impact to associated commercial operations. The Beach Management Protocol (Ministry of Health, 1998, 2003) provides a method for monitoring beach quality as a basis for posting swimming advisories on beaches when E. coli densities exceed a geometric mean (geomean) of 100 orgs $/ 100 \mathrm{ml}$. The Beach Management Protocol also calls for a pollution survey of the beach in order to investigate sources of fecal contamination.

As part of this protocol, it is important to identify the significant sources of fecal contamination affecting a beach in order to correctly target pollution preventive actions. From studies around the Great Lakes, several sources of fecal contamination that could potentially impact a beach area have been identified. These may include:

- Substandard or malfunctioning sewage systems (Howell 2005, Riedel et al. 1997)
- Agricultural runoff (Cayley 1996)
- Water bird droppings (Levesque et al. 1993, Edge and Hill 2007)
- Urban stormwater runoff (Scopel et al. 2006, Mattson et al. 2000)
- Mats of the filamentous green alga Cladophora
- Foreshore sand (Whitman and Nevers 2003)
- Sediment related bacteria (Seyfried et al. 1997)
- Bather load
- Degree of sheltering (Bilyea and Sherman 1989)
- Destruction of dune systems or encouraging turf grass which leads to wet beaches (Crowe and Milne 2007)

The posting of swimming advisories at Township of Tiny beaches has been a chronic occurrence over the last 10 years as monitoring of beaches has increased in frequency under the Beach Management Protocol.

Over the period 2003 to 2007, the Township of Tiny has requested the Severn Sound Environmental Association (SSEA) investigate sources of E. coli and the factors affecting beach quality at selected beaches along the coast of the Township. These investigations have included consideration of factors leading to elevated levels of E. coli at beaches. In addition to monitoring E. coli, investigations have also included measurements of physical and chemical status of area streams flowing into the beach areas.

The purposes of this report are to:

1. summarize the past investigations of SSEA and present the results of 2007 SSEA field work
2. discuss the potential sources of contamination to the beaches
3. provide the Township with management recommendations dealing with sources of E. coli to municipal beaches

## Past Studies of Township of Tiny Beaches

The SSEA worked in partnership with staff of the Simcoe-Muskoka District Health Unit, the Township of Tiny, the Ontario Ministry of the Environment and Environment Canada. During 2003 and 2004 the SSEA investigation focused mainly on Balm Beach, Jackson Park Beach and Woodland Beach and streams influencing these beaches. The field surveys undertaken in 2003 were designed to sample the beaches and the streams during rain events to determine the timing and effect of stream sources on beach quality. During 2003 and in subsequent years dry weather sampling of streams flowing into beaches was undertaken. Additional beach use data was collected with assistance of Township staff in order to document beach use and presence of birds on weekends during the recreational season, prior to beach sampling runs.

In 2005 SSEA continued to investigate potential sources of bacterial contamination impacting Woodland Beach, Balm Beach and Jackson Park Beach. In addition, sampling was also started on Lafontaine Creek in the northern part of the Township in order to investigate the water quality of this major stream in the Township. In 2005 SSEA also worked with Environment Canada to investigate the mouth of the Nottawasaga River as a source of sediment and bacteria to beaches along the Tiny Township Coast.

Investigation of stream quality during dry weather continued in 2006 with additional sampling of Balm Beach Creek, Little Balm Beach Creek and Lafontaine Creek.

An analysis of routine beach monitoring data taken by the Health Unit from 2003 to 2005 has shown significant relationships between proportion of sample days when the beach exceeds 100 E.coli and other environmental factors. Many of the Health Unit factors suggest that the proportion of days the beach samples exceed 100 E.coli relates to rough windy weather and elevated turbidity. Several days of exceedances occurred without associated rain events within the previous 24 hours during 2004 suggesting that factors other than rain events may relate to elevated bacteria levels.

The SSEA study for 2004 found that some elevated E. coli densities may relate to the transport or resuspension of bacteria-laden sediment.

Additional sampling was undertaken in cooperation with Environment Canada at the mouth of the Nottawasaga River during 2005 to investigate the River as a source of contamination to Township beaches. The nature of discharges of major rivers and streams was further examined through the collection and interpretation of air photos. Other lines of evidence included the investigation of complaints of aesthetic and pollution problems in Allenwood Beach and in Beaches near the $16^{\text {th }}$ Concession.

Study Approach in 2007

The approach taken in 2007 was to investigate the quality of streams from Lafontaine Creek to Woodland Beach. Rainfall was also collected. In partnership with the Health Unit, beach quality along the coast was compared to other factors that could be influencing beach quality.

Research of methods of microbiological source tracking using DNA, PCR and antibiotic resistance techniques is ongoing and is not a routine method that is available for all areas of the Great Lakes (see Edge and Hill 2007). It was decided that additional sampling runs for routine parameters and measurements of physical and chemical factors should be pursued during 2007 until these methods have been proven effective and conclusive.

Research by Environment Canada scientists and others have shown that the foreshore or swash zone along the waters edge is rich in E. coli and should be considered a source of bacterial contamination to beaches (Crowe and Milne 2007). However, it is not clear what the public health significance of the foreshore E. coli or E. coli associated with bird droppings has for beach quality (see Edge and Hill 2007).

## Methods

## Sampling Locations

The study area has included selected beaches and associated sub-watersheds draining to them. These beaches included Balm Beach, Jackson Park Beach and Woodland Beach. In addition, the quality of Lafontaine Creek from headwaters to the mouth was investigated. Other streams flowing to the Bay were also sampled at locations near the stream mouth during 2007. Figure 1a\&b show the sampling locations.

In addition to sampling, SSEA has obtained air photos over the years of the study that have been interpreted and show the orientation of stream discharges along the coast. These air photo interpretations were used to infer transport mechanisms for nearshore contamination and impingement of discharges laden with sediment and E. coli on beaches.

## Sample Collection

Bacteria and chemistry samples were collected from stream locations as "dry weather" samples. In addition, field analysis of temperature, dissolved oxygen, conductivity and pH were measured using a calibrated YSI 650 multiparameter meter (Sonde).

Water samples for E. coli and chemistry were collected on four occasions in Balm Beach Stream and two occasions in Jackson Park Creek. These samples were collected in order to characterize the quality of streams and discharges to the beach areas during dry
weather. No attempt was made to sample the stream locations during rain events as the scope of the survey did not allow sufficient sampling time or analyses. Field analysis of temperature, dissolved oxygen, conductivity and pH were measured using a calibrated YSI 650 multiparameter meter (Sonde). Water samples were collected from up to ??? locations depending on flow conditions at the time of sampling.

Bacteria samples were collected using sterile technique and immediately stored on ice for transport to the laboratory within 12 hours of sampling. Chemistry samples were collected and transported on ice to the laboratory within 36 hours of sampling.

Rainfall monitoring
In order to obtain rainfall data near the beaches in the Township and relate the rainfall to other regional rain gauges, additional tipping-bucket recording rain gauges were installed at four locations within the Township (near Woodland Beach, Balm Beach, Huronia Airport and near Georgian Sands water system). The first full year of operation of the recording gauges was 2005. The recording rain gauges were deployed in spring and taken down in fall of 2005, 2006 and 2007.

## Sample Analyses

All microbiological samples were analysed at Central Ontario Analytical Laboratory (COAL) in Orillia, Ontario. COAL is an accredited and certified laboratory and was selected because it uses the identical analytical protocol for Escherichia coli (E. coli) as the Ontario Public Health Laboratory in Orillia where the routine beach monitoring samples are analysed. Sample bottles were sterile polyvinyl bacteria sample bottles obtained from Central Ontario Analytical Laboratory (COAL), similar to those used by the Ontario Public Health Laboratory and Health Unit staff for routine sampling.

Water samples for chemistry were analyzed by the Ministry of the Environment Laboratory at Rexdale. Samples for 2007 were analysed for lab pH, suspended solids, total ammonia, total nitrate, total Kjeldahl nitrogen, total phosphorus and lab conductivity using standard MOE Laboratory Services Branch methods.

## Results

## Rain Event Monitoring

Information on rain event amount, duration and intensity is needed to interpret the beach and stream monitoring results. Stream bacteria or chemistry may change in relation to fluctuations in stream flow. It has been shown by the Health Unit that there are a greater number of exceedences of the provincial beach quality objective following rain events. Rainfall and rainfall intensity are provided in the Appendix 1. A comparison of peaks in rainfall was made for several dates through 2005, 2006 and 2007 to examine the spatial variability of events (see Appendix 1). Generally, rainfall on an event basis can vary
widely in the amount and timing of rainfall. On a daily basis, rainfall was generally similar over the Township. Isolated events could often be seen to travel over the rain gauge sites but with similar magnitude of rainfall intensity. Other rainfall gauges in the Severn Sound area were also comparable to the Tiny Township gauges. The significant rain events (those greater than 15 mm ) were compared with exceedences of the E. coli geomean of 100 orgs $/ 100 \mathrm{ml}$ at the beaches monitored by the Health Unit or to determine the weather conditions during stream sampling. Of the years monitored, summer rain events seldom exceeded 30 mm immediately prior to the beach sampling. The beach quality for those events that exceeded the Provincial Beach Quality Objective generally showed a pattern along the coast of the Township (Figure 2).

The long-term rainfall characteristics of the North Simcoe area were examined as part of the North Simcoe Municipal Groundwater Study (Golder Associates 2005). In general, there is a slight, south-to-north increase in long-term mean annual rainfall along the coast of the Township ranging between 975 and 1000 mm . Lapen and Hayhoe (2003) analysed data for the Grey-Bruce area east of Lake Huron, showed a lake effect on precipitation with an increase in precipitation for July with distance westward from the coast.

## Flow Monitoring

SSEA conducted base flow monitoring of Lafontaine Creek. Measurement of base flow was carried out from upstream to downstream on the Creek during July 13 \& 14, 2005, following a period of dry weather, in order to identify stream reaches contributing groundwater to the flow of the stream. The west branch of the Creek was generally dry to Concession 15 Road. The east branch originates above Concession 17 Road and has a constant, cold flow at this crossing. As the stream flows from the $17^{\text {th }}$ Concession to the $15^{\text {th }}$ Concession, the Creek loses base flow (i.e. flow measured decreases). This means that the stream is recharging the ground within this area. Further downstream, below the $15^{\text {th }}$ Concession and as the Creek flows down the Nippissing Ridge to the Bay level, the Creek gains more flow.

## Stream Temperature

Temperatures of streams and ditches flowing into the beach areas were monitored using spot temperature measurements taken at the time of sample collection and through temperature loggers (Hobo temperature loggers). The streams flowing into the coastal areas were almost all cold water streams during dry, warm weather conditions, indicating that the base flow was heavily influenced by groundwater discharge.

Stream temperatures from the continuous temperature loggers ranged between 12 and $22^{\circ} \mathrm{C}$. Most of the stream locations sampled were coldwater streams which did not differ significantly from year to year (Figures 3a,b,c).

Year to year differences were not significantly different at the same stream location. However, streams did show upstream to downstream differences. The temperatures of three locations in Lafontaine Creek showed that the middle section of the stream
(crossing the $15^{\text {th }}$ Concession) was warmer than the cold upstream site (crossing of $17^{\text {th }}$ Concession) and the lower site near the stream mouth (crossing of $13^{\text {th }}$ Concession) (Figure 4). This is consistent with the loss of base flow (recharge to the ground) in the middle section.

## Stream Quality

During 2007, the geometric mean stream E.coli densities (for six dry weather samples) ranged from 59 at station WB2 to 300 at Station La Ck 9 (Table 1). More than half of the streams sampled were carrying greater than 100 E . coli/ 100 ml into the coastal waters during dry weather. Station BW1 was an intermittent drain outfall that had a high dry weather sample of $1,400 \mathrm{E}$. coli $/ 100 \mathrm{ml}$, indicating potential sources of pollution were entering the drain. Based on previous surveys by SSEA (2003) and by Crowe (in prep.), it is expected that all of these streams represent sources of elevated E. coli during rain events. This means that the streams, especially those discharging directly into beach areas (such as Balm Beach Creek, Jackson Park Creek and Lafontaine Creek) should be considered sources of bacteria to the beaches.

A comparison of 2006 and 2007 E. coli densities in Lafontaine Creek showed a similar pattern between years from upstream to downstream in the east branch of the Creek with a peak in E. coli density at the $15^{\text {th }}$ Concession and another peak near the mouth of the Creek (Figure 5). This indicates sources of bacterial contamination from land uses in the watershed and from the urbanized area near the mouth. The upstream to downstream pattern in Balm Beach and Little Balm Beach Creeks in 2006 showed elevated E. coli densities near the coast, indicating that the built up area near the coast was influencing the stream quality (Figure 6). These results are consistent with other streams in Severn Sound where agricultural lands may be contributing bacterial contamination (Cayley 1996) or where urban areas are contributing bacterial contamination (Mattson et al. 2000).

Nitrate $\left(\mathrm{NO}_{3}\right)$ concentrations provide an indication of how land uses are influencing the stream quality. A natural stream with forest cover will normally have relatively low nitrate concentration (less than $0.5 \mathrm{mg} / \mathrm{L}$ ) while streams influenced by urban or agricultural land use will have concentrations greater than $1 \mathrm{mg} / \mathrm{L}$. Nitrate concentrations during 2007 at stream mouths ranged from $0.23 \mathrm{mg} / \mathrm{L}$ at Station OTBS to $9.1 \mathrm{mg} / \mathrm{L}$ at Station B18 (Table 1). Values were generally above $1 \mathrm{mg} / \mathrm{L}$ indicating that most streams were being influenced by land use practices in the stream sub-watersheds. A comparison of 2006 and 2007 nitrate concentrations in Lafontaine Creek showed a similar pattern of low upstream nitrate concentrations (less than $0.5 \mathrm{mg} / \mathrm{L}$ ) to a peak of moderately high nitrate (greater than $1 \mathrm{mg} / \mathrm{L}$ ) in the downstream portion of the Creek at the $13^{\text {th }}$ Concession toward the mouth of the Creek (Figure 7). This is consistent with the effect of runoff from urbanized land in the lower reaches of the Creek. The upstream to downstream pattern in Balm Beach and Little Balm Beach Creeks in 2006 had elevated and steady nitrate concentration ( $4 \mathrm{mg} / \mathrm{L}$ and $10 \mathrm{mg} / \mathrm{L}$ respectively) from the forest edge below the Nippissing Ridge to the Bay, indicating that land use in the watershed and the built up area near the coast were influencing the stream quality (Figure 8).

Suspended solids, a measure of the turbidity of the water, ranged from a mean of 4.5 $\mathrm{mg} / \mathrm{L}$ at Station OTBS to $24.3 \mathrm{mg} / \mathrm{L}$ at Station B18 (Table 1). Station BW1 was an intermittent drain outfall that had a high value, when flowing, of $201 \mathrm{mg} / \mathrm{L}$.

Mean total phosphorus concentration at stream mouth stations varied from $0.011 \mathrm{mg} / \mathrm{L}$ at Station JP3 to $0.058 \mathrm{mg} / \mathrm{L}$ at Station WB1 (Table 1). The majority of mean values were above $0.030 \mathrm{mg} / \mathrm{L}$ which exceeds the MOE guideline for total phosphorus and suggests land use influence. The concentration at Station BW1 was elevated ( $0.182 \mathrm{mg} / \mathrm{L}$ ) suggesting a source of nutrients was present in the discharge.

Historical changes in the quality of dry weather flow at Stations that had been monitored over the period of the study (2003 to 2007) were also compared (Table 2). Most stream stations are showing a decline in geometric mean E. coli density and nitrate concentration with the exception of Stations JP3 and JP6. Lafontaine Creek showed no declining trend.

## Discussion

An analysis of routine beach monitoring data taken by the Health Unit from 2003 to 2005 has shown significant relationships between proportion of sample days when the beach exceeds 100 E.coli and other environmental factors (Health Unit Report to Council 2006). Many of the Health Unit factors suggest that the proportion of days the beach samples exceed 100 E.coli relates to rain events, rough windy weather and elevated turbidity. Several days of exceedances occurred without associated rain events within the previous 24 hours, suggesting that factors other than rain events alone may relate to elevated bacteria levels.

The dry weather quality of streams at stream mouths suggests that streams discharging to coastal beaches are a source of E. coli. These sources become significantly elevated in E. coli during rain events, bringing larger densities of E. coli into the beach area for the short duration of the rain event. Based on modeling studies by SNC-Lavalin (2006) for the Lake Simcoe Region Conservation Authority, the Nottawasaga River can represent a significant source of contamination to the southerly portion of the Township coast, south of Spragg Point (Photo 1). This contamination can last for longer periods as storm events will swell the flow of the River for longer periods than the local streams. On a similar but smaller scale, Lafontaine Creek may be influencing the beach quality at the northern portion of the coast (Photo 2). In the Township of Tiny, the smaller streams flowing into the Bay tend to turn and discharge along the shoreline spreading out before being disbursed into the open waters.

The 2003 SSEA study and cooperative sampling with Environment Canada in 2005 found that some elevated E. coli densities may relate to the transport or resuspension of bacteria-laden sediment. A recent interim report of a large study of Lake Huron beaches (Howell 2005) suggested that elevated levels of E.coli in lake water may not only reflect recent fecal pollution from direct sources at or local to the beach but also E.coli could
originate from some distance from the beach or through re-suspension of particles with associated bacteria introduced to the beach from previous events. Interpretation of air photos of the coastal areas with streams discharges has shown that the streams tend to turn and follow the shoreline before dispersing to the open waters (e.g. Photo 2).

Substandard or malfunctioning sewage systems are being corrected through the Township's re-inspection program. The program in the Balm Beach area may have contributed to annual declines in dry weather E.coli results for Balm Beach Creek. The overall effect of urban runoff on Township streams is still evident in the quality effects in built up areas along the coast. It would appear from upstream to downstream sampling that E. coli levels increase as they pass through built up areas adjacent to the coast. Wash-off from streets, dense residential and commercial areas has been shown to contribute E.coli to runoff (Mattson, et al. 2000, Scopel et al. 2006). The effect of urban runoff, tile drained areas and sewage system seepage to streams may not be separable as a particular source of E. coli. Control of all these sources will contribute to declines in stream E. coli densities as well as nutrient and sediment concentrations.

Runoff from agricultural operations has been shown to affect the quality of streams in other areas (Cayley 1996, Howell 2005). Monitoring of the Township of Tiny streams (SSEA this study, Crowe in prep.), and other streams in Severn Sound (Mayrand et al. 2000, Cayley 1996, Mattson et al. 2000) has shown that the E. coli levels in streams during dry weather, but especially during rain events is a source of bacterial contamination to downstream waters. Streams that have largely natural land cover can still be a source of bacterial contamination. The Lafontaine Creek monitoring results suggest that sources of E. coli relating to agricultural areas in the watershed, as well as the urban areas near the mouth, appear to be influencing the quality of the stream.

The droppings of water birds such as gulls and geese have been shown to be of increasing concern as sources of E. coli in beach studies on the Great Lakes (Whitman and Nevers 2003, Levesque et al. 1993, Edge and Hall 2007). Although the health risks associated with shallow beach water contaminated with high levels of E. coli from bird sources remains uncertain (Edge and Hall 2007), in some areas of the Township beaches, bird droppings are considered a source of concern (Crowe in prep.). The encouragement of water birds to loaf on beaches has also been noted to relate to wet beach areas along the shoreline, especially where turf grass is encouraged near the beach. Natural dune areas should be protected and maintained as they are less attractive to Canada Geese. Removal of dunes to smooth beach views results in reduction in the dry overburden of the shallow groundwater systems beneath the beach and promotes transport of bacteria and the proliferation of other wetland or turf vegetation.

Sheltering of the beach from wind and wave action and exchange with the open water has been shown to relate to increased fecal bacteria levels (Bilyea and Sherman 1989). The reduction of exchange can lead to accumulation of bacteria entering the beach area as well as lead to other aesthetic problems such as the growth of plants and algae in the nearshore waters. This was particularly the case in Lafontaine Beach where groynes and nearshore structures have created sheltered areas which have become stagnant, warm and
congested with plants and algae, debris and decomposing matter. Other nearshore features, such as the larger points at Allenwood Beach, provide sheltering and trapping of light, fine sediment material (Photo 3). The points at Balm Beach and Jackson Park Beach provide local sheltering and partially trap streams discharging to the beach area. Due to the dynamic nature of the coastal areas of the beaches along Nottawasaga Bay up to the Christian Island area, the sheltering of beach areas, except for areas influenced by groyne structures.

On a regional scale Spratt Point appears to provide a major barrier influencing nearshore/offshore currents in Nottawasaga Bay (SNC-Lavalin 2006). The plume of the Nottawasaga River has elevated sediment and E. coli levels that may be impinging on beach areas in the Township of Tiny up to Spratt Point (see Figure from SNC-Lavalin 2006). Crowe (in preparation) has measured elevated E. coli in the plume off the mouth of the River. SSEA air photos show the plume off the mouth clearly impinging along the coast of Tiny Township (Photo 1).

## Conclusions

1. Based on the Health Unit analysis of routine monitoring data, the proportion of days the beach samples exceed 100 E.coli relates to rain events, rough windy weather and elevated turbidity. Preceding rain events were more likely to result in exceedences, however, several days of exceedances occurred without associated rain events within the previous 24 hours, suggesting that factors other than rain events alone may relate to elevated bacteria levels. Routine weekly monitoring of Beaches provides limited monitoring of the effect of rain events on streams flowing into the beach. The SSEA event-related sampling survey of 2003 provided a more direct relationship to beach quality during rain events. It should be noted that rain events are normally accompanied by high winds and turbidity and so these factors can be interrelated.
2. Sources of E.coli impacting Township of Tiny beaches include: streams flowing onto the beach, faulty or substandard private sewage systems, urban runoff, water birds, foreshore sand on the beaches and other potential watershed sources. The sampling of stream mouth stations during dry weather has shown that the streams continue to be a source of elevated E. coli densities. More than half of the streams sampled were carrying greater than 100 E . coli/ 100 ml into the coastal waters during dry weather. Station BW1 was an intermittent drain outfall that had a high dry weather sample of $1,400 \mathrm{E}$. coli/ 100 ml , indicating potential sources of pollution were entering the drain. Based on previous surveys by SSEA (2003) and by Crowe (in prep.), it is expected that all of these streams represent sources of elevated E. coli during rain events. This means that the streams, especially those discharging directly into beach areas (such as Balm Beach Creek, Jackson Park Creek and Lafontaine Creek) should be considered sources of bacteria to the beaches. The year to year results of dry weather sampling (Table 2) suggest that there may be some improvement in the levels of E. coli, especially at Balm Beach Creek and Little Balm Beach Creek.
3. Other factors that may influence the elevation of E. coli levels in Township of Tiny beaches include: the degree of sheltering of the beach especially through artificial structures such as groynes; water bird pollution of beaches; modified or natural "wet beaches" that encourage the growth of wetland plants and/or turf grass. The swash zone accumulation of bacteria that can be released to the water column during rough weather is also a mechanism that may contribute to beach contamination. The orientation of beaches and the degree of sheltering may be a natural "fact of life" for most of the beaches along the coast of the Township. Where artificial structures (groynes) have been put in place, it may be possible to improve exchange by modifying or removing them, thereby improving quality for swimming.
4. A series of actions can be taken to reduce or control sources of bacterial contamination. If done in an integrated fashion, it may be possible to reduce the number of sample days where exceedance of the provincial objective for E. coli occurs.

## Recommended Action

1. Continue to inspect and abate faulty or substandard private sewage systems.
2. Consider treatment of stormwater runoff to provide retention and reduction of solids and bacteria prior to discharge near beaches. A review of stormwater treatment options for Balm Beach should be carried out to identify options for stormwater treatment of runoff prior to discharge to the beach.
3. Consider moving the stream outlets discharging directly onto beaches. The feasibility of moving the outlet of Balm Beach Creek and Jackson Park Creek off the Beaches should be investigated. Where feasible these outlets should be directed off the points where dispersion and mixing of their discharge would be accomplished more effectively and the concentration of their discharge on beaches would be reduced or eliminated.
4. The drain represented by Station BW1 should be further investigated for sources of pollution and followed up with corrective action as necessary.
5. Measures to reduce soil erosion and stream bank erosion through maintenance and establishment of natural vegetation buffers should be pursued for watersheds such as Lafontaine Creek. This could be carried out through enhancement of the Severn Sound Healthy Streams Program in cooperation with the Environmental Farm Plan Program which encourages the implementation of stream buffers and other farm best management practices to reduce pollution sources.
6. Consider removal or modification of selected groynes in order to improve water circulation in stagnant beach areas, especially in the case of beaches in the Lafontaine area or further north along the coast. Discussions with the Department
of Fisheries and Oceans should take place to integrate any actions with fish habitat protection.
7. Prepare shoreline landowner guides that include care of sewage systems, the value of dune systems to beach quality and the value of naturalization rather that the development of turf grass next to beaches. Measures to protect public beach areas from modification by adjacent landowners should be pursued by the Township.
8. The Township should be aware of and comment on any proposals to modify the mouth of the Nottawasaga River in order to protect the beaches in the southern coast of the Township from further regional adverse effects of the River discharge.

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Table 1 Water Quality of Tiny Beaches Streams near stream mouth 2007
Mean values of six sample runs

| Station | Location | Field Measurements |  | $\begin{gathered} \text { E. coli } \\ \text { (per } 100 \mathrm{ml} \text { ) } \end{gathered}$ | $\begin{gathered} \mathrm{SS} \\ (\mathrm{mg} / \mathrm{L}) \end{gathered}$ | Cond. (uS/cm) | pH | Ammonia (mg/L) | Nitrite <br> (mg/L) | Nitrate <br> (mg/L) | Phosphate (mg/L) | $\begin{gathered} \text { TP } \\ (\mathrm{mg} / \mathrm{L}) \end{gathered}$ | $\begin{gathered} \text { TKN } \\ \text { ( } \mathrm{mg} / \mathrm{L} \text { ) } \end{gathered}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Temp | DO |  |  |  |  |  |  |  |  |  |  |
| BB4 | Beach -cement bridge mouth of big balm | 14.9 | 9.6 | 108 | 16.4 | 516 | 8.27 | 0.011 | 0.013 | 3.018 | 0.0065 | 0.033 | 0.572 |
| B18 | mouth of small balm Watering Stream | 14.2 | 10.1 | 96 | 24.3 | 560 | 8.36 | 0.009 | 0.004 | 9.092 | 0.0015 | 0.033 | 0.525 |
| JP6 | Tiny Beaches Road by Conc. 9 | 14.1 | 9.6 | 82 | 9.1 | 505 | 8.32 | 0.016 | 0.007 | 2.020 | 0.0039 | 0.021 | 0.488 |
| JP3 | Birchdale Road Off of Tiny Beaches Road | 13.8 | 10.2 | 66 | 6.1 | 400 | 8.37 | 0.009 | 0.003 | 0.796 | 0.0010 | 0.011 | 0.272 |
| BW1 | Bluewater Beach-Culvet at the South End of Park off of Glen Avenue note: 2 samples only | 14.9 | 9.7 | 130 | 102.1 | 467 | 8.42 | 0.030 | 0.004 | 1.695 | 0.0122 | 0.182 | 0.870 |
| OTBS | Tiny Beaches Road Crossing between Conc4\&5 | 14.2 | 9.8 | 127 | 4.5 | 339 | 8.29 | 0.017 | 0.006 | 0.230 | 0.0044 | 0.036 | 0.315 |
| WB1 | TBRS at Oak Street | 15.6 | 9.6 | 224 | 18.7 | 488 | 8.39 | 0.015 | 0.007 | 2.526 | 0.0060 | 0.058 | 0.660 |
| WB2 | Drain No. 3 crossing TBRS between South St \& Culver St | 14.0 | 9.3 | 59 | 9.0 | 507 | 8.20 | 0.015 | 0.005 | 0.241 | 0.0175 | 0.045 | 0.555 |
| Lafontaine Lafontaine Creek |  |  |  |  |  |  |  |  |  |  |  |  |  |
| LaCk9 | 13th Conc. W side of Tiny Beaches Road N at bridge crossing | 16.8 | 10.0 | 300 | 13.6 | 360 | 8.32 | 0.012 | 0.010 | 1.266 | 0.0068 | 0.023 | 0.330 |

Table 2 Water Quality of Tiny Beaches Streams near stream mouth 2003 to 2007 Mean values of dry weather sample runs where available

| Station Year |  | Field Measurements |  |  |  | $\begin{gathered} \text { E. coli } \\ \text { (per } 100 \mathrm{ml} \text { ) } \end{gathered}$ | $\begin{gathered} \mathrm{SS} \\ (\mathrm{mg} / \mathrm{L}) \end{gathered}$ | NO3 | $\begin{gathered} \text { TP } \\ (\mathrm{mg} / \mathrm{L}) \end{gathered}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Temp | Conductivity | DO | pH |  |  |  |  |
| BB4 | 2003 | 12.6 | 498 | 9.3 | 8.07 | 180 |  |  | 0.018 |
|  | 2004 | 13.2 |  |  |  | 237 |  | 4.70 | 0.040 |
|  | 2005 | 14.5 | 486 | 10.0 | 7.52 | 3744 | 14.1 | 4.21 | 0.026 |
|  | 2006 | 15.5 | 541 | 8.7 | 8.40 | 352 | 22.3 | 3.50 | 0.038 |
|  | 2007 | 14.9 | 553 | 9.6 | 8.32 | 105 | 16.4 | 3.02 | 0.033 |
| B18 | 2005 | 14.2 | 509 | 10.4 | 7.67 | 320 | 27.2 | 10.48 | 0.023 |
|  | 2006 | 16.7 | 564 | 9.4 | 8.66 | 178 | 14.5 | 9.94 | 0.009 |
|  | 2007 | 14.2 | 620 | 10.1 | 8.60 | 96 | 24.3 | 9.09 | 0.033 |
| JP3 | 2003 | 14.9 | 379 | 9.2 | 8.14 | 93 |  |  | 0.010 |
|  | 2004 | 12.5 | 398 | 8.2 | 8.20 | 40 |  | 0.54 | 0.012 |
|  | 2005 | 13.1 | 399 | 10.2 | 7.72 | 71 | 11.7 | 0.73 | 0.013 |
|  | 2006 |  |  |  |  |  |  |  |  |
|  | 2007 | 13.8 | 436 | 10.2 | 8.52 | 66 | 6.1 | 0.80 | 0.011 |
| JP6 | 2003 | 14.2 | 487 | 9.0 | 8.16 | 94 |  |  | 0.016 |
|  | 2004 |  |  |  |  |  |  |  |  |
|  | 2005 | 13.9 | 407 | 9.8 | 7.72 | 94 | 5.5 | 1.97 | 0.017 |
|  | 2006 |  |  |  |  |  |  |  |  |
|  | 2007 | 14.1 | 519 | 9.6 | 8.42 | 82 | 9.1 | 2.02 | 0.021 |
| LaCk 9 | 2005 | 14.2 | 366 | 10.5 | 7.57 | 271 | 5.3 | 1.49 | 0.017 |
|  | 2006 | 16.7 | 314 | 8.8 | 8.52 | 491 | 6.8 | 1.33 | 0.027 |
|  | 2007 | 16.1 | 389 | 10.0 | 8.47 | 326 | 7.0 | 1.27 | 0.023 |

## Figure 1a Beach Study Areas 2007



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Figure 2 Elevated E. coli events at Township of Tiny Beaches 2004-2007 (data from Simcoe-Muskoka Health Unit)


Figure 3a -Tiny Beach Study - Water Temperature at BB4


Figure 3b -Tiny Beach Study - Water Temperature at JP3


Figure 3c -Tiny Beach Study - Water Temperature at OTBS


Figure 4 Mean daily stream temperatures at three locations in Lafontaine Creek during 2005, 2006 and 2007


Figure 5 E. coli at stations in Lafontaine Creek during 2006 and 2007 Geometric mean values of 6 samples each year


Figure 6
E. coli at stations in Big Balm Creek and Little Balm Creek during 2006 Geometric mean values of 6 samples


Figure 7 Nitrate concentration at stations in Lafontaine Creek during 2006 and 2007, Geometric mean values of 6 samples each year


Figure 8
Nitrate concentration at stations in Big Balm Creek and Little Balm
Creek during 2006 Geometric mean values of 6 samples


Photo 1
Aerial view of the discharge of the Nottawasaga River into Nottawasaga Bay, July 2006 (photo by Aerocamera Services Ltd.)


Photo 2
Aerial view of the discharge of Lafontaine Creek along the coast of the Township of Tiny, April 2002 (Source 2002 Ortho Image MNR)


Photo 3
Fine sediment trapped at Allenwood Beach, Township of Tiny, August, 2005 (SSEA photo)


APPENDIX 1 Rainfall data from recording rain gauges in the Township of Tiny May to September, 2005 to 2007
Notes:
Location IDs
BB = Balm Beach on public washrooms
GS = Georgian Sands near water system reservoir
HA = Huronia Airport
WB = Woodland Beach on Woodland Beach Fire Hall
May Woodland Beach 2006 data collection did not start at the beginning of the month.
Huronia Airport gauge logger malfunctioned during 2006 and May and June 2007

Rainfall Events comparison 2006 (for events greater than 5 mm )
Rain gauges were not out in April

| Month | Balm day(s) | event total | month total | Woodland day(s) | event total | month total | Georgian day(s) | event total | month total | $\begin{aligned} & \text { Beausoleil } \\ & \text { day(s) } \end{aligned}$ | event total | month total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| April | no data |  |  | no data |  |  | no data |  |  | $\begin{aligned} & \hline 1 \\ & 7 \\ & 12 \text { to } 14 \\ & 22 \text { to } 25 \end{aligned}$ | $\begin{array}{r} 10.5 \\ 5.3 \\ 18.6 \\ 29 \end{array}$ | 81.5 |
| May | $\begin{array}{\|l\|} \hline 11 \text { to } 13 \\ 18 \text { to } 21 \\ 30 \text { to } 31 \end{array}$ | no rain 10.0 6.8 | 19.0 | $\begin{aligned} & 11 \text { to } 13 \\ & 18 \text { to } 22 \\ & 30 \text { to } 31 \end{aligned}$ | no rain 12.2 <br> 5.6 | 19.2 | $\begin{aligned} & 11 \text { to } 13 \\ & 16 \text { to } 22 \\ & 30 \text { to } 31 \end{aligned}$ | $\begin{array}{r} 20 \\ 20.4 \\ 4.8 \end{array}$ | 49.4 | $\begin{aligned} & 11 \text { to } 13 \\ & 15 \text { to } 21 \\ & 31 \end{aligned}$ | $\begin{array}{r} 22 \\ 16.0 \\ 2.8 \end{array}$ | 46 |
| June | $\begin{aligned} & 18 \text { to } 19 \\ & 27 \text { to } 29 \end{aligned}$ | $\begin{array}{r} 41.6 \\ 5.4 \end{array}$ | 53.8 | $\begin{aligned} & 18 \text { to } 19 \\ & 27 \text { to } 29 \end{aligned}$ | $\begin{aligned} & 16.6 \\ & 15.8 \end{aligned}$ | 38.4 | $\begin{aligned} & 18 \text { to } 19 \\ & 27 \text { to } 28 \end{aligned}$ | $\begin{array}{r} 39.2 \\ 4.6 \end{array}$ | 49.6 | $\begin{aligned} & 18 \text { to } 19 \\ & 28 \end{aligned}$ | $\begin{array}{r} 36.9 \\ 0.7 \end{array}$ |  |
| July | 4 10 12 to 13 14 15 17 20 to 21 23 26 to 27 29 | 0.6 13.6 18.2 <br> no rain no rain no rain <br> 14.2 <br> 2.4 <br> 27.4 <br> 10.8 | 92.2 | 4  <br> 10  <br> 12  <br> 14  <br> 15  <br> 17  <br> 20  <br> 23 to 25 <br> 26  <br> 29  | 1.6 13.0 10.2 34.6 no rain no rain 24.4 3.2 16.6 38.2 | 147.8 | 4 <br> 10 <br> 12 <br> 14 <br> 15 <br> 17 <br> 20 <br> 23 to 24 <br> 26 <br> 29 | 0.2 6.4 4.8 <br> no rain no rain $6.4$ <br> 15.4 <br> 3.4 <br> 31.4 <br> 14.4 | 86.8 | 4 <br> 10 <br> 12 <br> 14 <br> 15 <br> 17 to 18 <br> 20 <br> 23 to 25 <br> 26 <br> 29 | $\begin{array}{r} 5.2 \\ 0.6 \\ 2.2 \\ \text { no rain } \\ 5.2 \\ 7.9 \\ 0.6 \\ 23.0 \\ 40.2 \\ 33.4 \end{array}$ | 125.1 |
| August | $\begin{array}{\|l\|} \hline 2 \\ 19 \\ 25 \text { to } 27 \\ \hline \end{array}$ | $\begin{array}{r} 11.0 \\ 8.6 \\ 16.6 \\ \hline \end{array}$ | 41.2 | $\begin{array}{\|l\|} \hline 2 \\ 19 \\ 25 \\ \text { to } 26 \\ \hline \end{array}$ | $\begin{array}{r} 11.0 \\ 2.2 \\ 14.0 \\ \hline \end{array}$ | 30.0 | $\begin{array}{\|l\|} \hline 2 \\ 19 \\ 23 \text { to } 27 \\ \hline \end{array}$ | $\begin{array}{r} 26.6 \\ 3.8 \\ 26.0 \\ \hline \end{array}$ | 57.6 | $\begin{array}{\|l\|} \hline 2 \\ 19 \\ 23 \text { to } 27 \\ \hline \end{array}$ | $\begin{array}{r} 21.7 \\ 4.8 \\ 13.1 \\ \hline \end{array}$ | 42.8 |
| September | $\begin{array}{\|l\|} \hline 2 \text { to } 4 \\ 8 \text { to } 9 \\ 12 \text { to } 13 \\ 18 \text { to } 21 \\ 23 \text { to } 25 \\ 27 \\ \hline \end{array}$ | $\begin{array}{r} 27.4 \\ 4.0 \\ 5.6 \\ 30.8 \\ 20.0 \\ 5.2 \end{array}$ | 95.6 | 2 to 4 <br> 8 to 9 <br> 12 to 13 <br> 18 to 21 <br> 23 to 24 <br> 27 | 44.6 10.2 9.4 20.6 7.0 6.6 |  | 2 to 4 <br> 8 to 9 <br> 12 to 14 <br> 18 to 21 <br> 23 to 25 <br> 27 | 31.8 5.2 9.4 43.0 21.2 9.8 | 126.4 | $\begin{aligned} & 2 \text { to } 3 \\ & 8 \text { to } 9 \\ & 12 \text { to } 13 \\ & 18 \text { to } 27 \end{aligned}$ | $\begin{array}{r} 24.4 \\ 6.4 \\ 5.8 \\ 100.1 \end{array}$ | 142.2 |
| October | $\begin{array}{\|l\|} \hline 4 \\ 11 \\ 17 \\ 22 \text { to } 24 \\ 27 \text { to } 29 \\ \hline \end{array}$ | $\begin{aligned} & \hline 10.4 \\ & 26.0 \\ & 11.4 \\ & 19.0 \\ & 13.6 \end{aligned}$ | $84.2$ | 4  <br> 11  <br> 17  <br> 22 to 24 <br> 27 to 29 | $\begin{aligned} & \hline 11.6 \\ & 21.0 \\ & 19.2 \\ & 30.0 \\ & 17.6 \end{aligned}$ | $106.0$ | 4  <br> 11  <br> 17 to 19 <br> 22 to 24  <br> 27 to 29 | 8.6 31.2 24.2 33.6 21.8 | 123.8 | $\begin{array}{\|l} \hline 4 \\ 10 \text { to } 11 \\ 17 \text { to } 19 \\ 22 \text { to } 23 \\ 27 \text { to } 29 \\ \hline \end{array}$ | 7.7 41.6 28.8 39.3 34.8 | 172.1 |

Rainfall Events comparison 2005 (for events greater than 5 mm )
October Georgian gauge was working no events

| Month | Balm day(s) | event total | month total | Woodland day(s) | event total | month total | Georgian day(s) | event total | month total | Beausoleil day(s) | event total | month total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| April | 2 to 3 | no rain | 56.2 | 2 to 3 | no rain | 49.8 | 2 to 3 | no rain | 72.2 | 2 to 3 | 21.6 | 113.4 |
|  | 7 | no rain |  | 7 | no rain |  | 7 | no rain |  | 7 | 5.0 |  |
|  | 11 | 0.2 |  | 11 | 0.6 |  | 11 | 5.6 |  | 11 | no rain |  |
|  | 20 | 11.6 |  | 20 | 10.2 |  | 20 | 19.8 |  | 20 | 18.6 |  |
|  | 23 to 28 | 44.2 |  | 23 to 28 | 38.4 |  | 23 to 28 | 46.8 |  | 23 to 28 | 66.2 |  |
| May | 14 | 7.2 | 11.0 | 14 | 17.0 | 29.0 | 14 | 8.4 | 12.2 | 13 to 14 | 17 | 26.8 |
| June | 11 to 16 | 69.0 | 74.2 | 11 to 16 | 66.6 | 75.2 | 11 to 16 | 84.2 | 88.2 | 11 to 16 | 242.8 | 261.4 |
| July | 17 | 23.8 | 42.2 | 17 | 15.8 | 33.0 | 17 to 18 | 15.6 | 43.4 | 17 to 18 24 to 27 31 | 30.2 |  |
|  | 24 to 26 | 7.8 |  | 24 to 26 | 8.4 |  | 24 to 26 | 10.8 |  |  | 9.1 |  |
|  | 31 | 9.4 |  | 31 | 6.6 |  | 31 | 12 |  |  | 3.2 |  |
| August | 4 to 5 | 10.6 | 40.2 | 4 to 5 | 3.6 | 31.8 | $\begin{array}{\|l\|} \hline 4 \text { to } 5 \\ 19 \text { to } 22 \\ 27 \text { to } 30 \\ \hline \end{array}$ | 9.2 | 69.6 | $\begin{array}{\|l} \hline 4 \\ 19 \text { to } 22 \\ 27 \text { to } 29 \\ \hline \end{array}$ | 12.2 | 68.7 |
|  | 19 to 22 | 11.4 |  | 19 to 22 | 7.8 |  |  | 19.2 |  |  | 14.3 |  |
|  | 27 | 12.8 |  | 27 | 12.4 |  |  | 37.0 |  |  | 33.3 |  |
| September | 9 | no rain | 58.0 | 9 | 8.0 | 58.4 | $\|$9  <br> 22  <br> 25 to 26 <br> 29  | no rain | 75.6 | 92225 to 2628 to 29 | no rain | 97 |
|  | 22 | 8.0 |  | 22 | 5.2 |  |  | 6.2 |  |  | 7.4 |  |
|  | 25 to 26 | 30.4 |  | 25 to 26 | 30.4 |  |  | 42.6 |  |  | 48.4 |  |
|  | 29 | 11.8 |  | 29 | 10.4 |  |  | 18.0 |  |  | 30.8 |  |
| October | 13 to 16 | 15.0 | $29.0$ | 13 to 16 | 7.4 | $26.8$ |  | no events | $3.0$ | $\begin{aligned} & 13 \text { to } 16 \\ & 22 \text { to } 23 \end{aligned}$ | 9.3 | 23.5 |
|  | 22 to 23 | 5.6 |  | 22 to 23 | 9.8 |  |  |  |  |  | 6.5 |  |

Rainfall Events comparison 2007 (for events greater than 5 mm )
Note: Beausoleil data from the website ends on August 272007

| Month | Balm day(s) | event total | otal | Woodland day(s) event total month total |  |  | Georgian day(s) | event total month total |  | Beausoleil day(s) event tota |  | l month total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| April | 26 to 27 | 24.4 | 25.4 | 26 to 27 | 19.6 | 20.2 | 27.0 | 10.8 | 12.8 | 26 to 27 | 19.5 | 73.0 |
| May | 14 to 16 <br> 27 | $\begin{array}{r} 9.4 \\ 19.0 \\ 16.6 \end{array}$ | 50.4 | $\begin{aligned} & \text { 10-Sep } \\ & 14 \text { to } 16 \\ & 27 \\ & \hline \end{aligned}$ | $\begin{aligned} & 11.8 \\ & 20.2 \\ & 14.0 \end{aligned}$ | 53.6 | $9-10$ 14 to 16 27 | $\begin{aligned} & 16.0 \\ & 23.8 \\ & 13.8 \end{aligned}$ | 58.0 | $\begin{aligned} & 9 \\ & 14 \text { to } 16 \\ & 27 \end{aligned}$ | $\begin{aligned} & \hline 12.6 \\ & 27.2 \\ & 16.5 \end{aligned}$ | 59.1 |
| June | $\begin{array}{\|l\|} \hline 3 \text { to } 5 \\ 8 \\ \hline \end{array}$ | $\begin{array}{r} 20.6 \\ 4.8 \\ \hline \end{array}$ | 28.6 | $\begin{array}{\|l} \hline 3-5 \\ 8 \end{array}$ | $\begin{aligned} & 19.0 \\ & 18.4 \end{aligned}$ | 38.0 | $3-5$ <br> no rain | 21.6 | 22.4 | $\begin{aligned} & \hline 3-5 \\ & \hline \end{aligned}$ | $\begin{array}{r} 37.6 \\ 1.4 \\ \hline \end{array}$ | 49.7 |
| July | $\begin{array}{\|l} \hline 4 \\ 8 \\ 10 \\ 10 \\ \text { to } 11 \\ 14 \\ 10 \text { to } 11 \\ \hline \end{array}$ | $\begin{array}{r} 7.6 \\ 9.2 \\ 37.0 \\ 12.2 \\ 29.4 \end{array}$ | 99.6 | $\begin{array}{\|l} \hline 4 \\ 8-10 \\ 10 \text { to } 11 \\ 14 \\ 10 \text { to } 11 \\ \hline \end{array}$ | $\begin{array}{r} 7.2 \\ 34.8 \\ 11.4 \\ 0.0 \\ 0.0 \end{array}$ | 42.0 | $\begin{array}{\|l} \hline 4 \\ 8 \\ 10 \\ 10 \\ 14 \\ 14 \\ 10 \text { to } 11 \\ \hline \end{array}$ | $\begin{array}{r} 8.4 \\ 10.4 \\ 13.6 \\ 20.8 \\ 28.4 \end{array}$ | 82.4 | $\begin{aligned} & 4 \\ & 8 \\ & 10 \text { to } 11 \\ & 14 \\ & 10 \text { to } 11 \\ & \hline \end{aligned}$ | $\begin{array}{r} 7.4 \\ 6.7 \\ 25.4 \\ 20.5 \\ 12.4 \end{array}$ | 75.5 |
| Augus 1 | $\begin{array}{\|l\|l\|} \hline 2 \\ 23 & \text { to } 25 \\ \hline \end{array}$ | $\begin{aligned} & 19.2 \\ & 36.2 \end{aligned}$ | 57.8 | $\begin{aligned} & \hline 2 \\ & 23-25 \end{aligned}$ | $\begin{array}{r} 2.0 \\ 37.4 \end{array}$ | 40.6 | $\begin{aligned} & \hline 2 \\ & 23-25 \end{aligned}$ | $\begin{aligned} & 10.2 \\ & 44.6 \end{aligned}$ | 59.2 | $\begin{aligned} & 2 \\ & 23-25 \end{aligned}$ | no rain $37.4$ | 60 |
| September | 10 to 11 <br> 10 to 12 <br> 14 to 15 <br> 25 to 26 | $\begin{array}{r} 9.6 \\ 36.6 \\ 11.8 \\ 11.4 \\ \hline \end{array}$ | 73.4 | $\begin{array}{\|l\|} \hline 10 \text { to } 11 \\ 10 \text { to } 12 \\ 14 \text { to } 15 \\ 25 \text { to } 26 \\ \hline \end{array}$ | $\begin{array}{r} 7.4 \\ 40.4 \\ 10.8 \\ 10.4 \\ \hline \end{array}$ | 71.2 | 10 to 11 <br> 10 to 12 <br> 14 to 15 <br> 25 to 26 | $\begin{array}{r} 4.4 \\ 31.6 \\ 7.8 \\ 13.4 \\ \hline \end{array}$ | 59.2 | no data |  |  |
| October | 6 9 to 11 13 to 14 19 23 to 24 26 to 28 | $\begin{array}{r} \hline 36.8 \\ 4.8 \\ 0.8 \\ 4.4 \\ 6.8 \\ 11.8 \end{array}$ | 70.6 | $\begin{aligned} & 6 \\ & 9 \text { to } 11 \\ & 13 \text { to } 14 \\ & 19 \\ & 23 \text { to } 24 \\ & 26 \text { to } 28 \end{aligned}$ | $\begin{array}{r} 32.6 \\ 8.6 \\ 7.4 \\ 0.8 \\ 6.6 \\ 11.2 \end{array}$ | 74.2 | $\begin{aligned} & \hline 6 \\ & 9 \text { to } 11 \\ & 13 \text { to } 14 \\ & 19 \\ & 23 \text { to } 24 \\ & 26 \text { to } 28 \end{aligned}$ | $\begin{array}{r} 35.4 \\ 12.8 \\ 14 \\ 5.2 \\ 7 \\ 16.4 \end{array}$ | $96.2$ | no data |  |  |

Rainfall Rates (tenths of mm )


Rainfall Rates (tenths of mm )


Balm Beach Part 1

Rainfall Rates (tenths of mm )


Balm Beach Part 1

Rainfall Rates (tenths of mm)




Rainfall Rates (tenths of mm )


Station: $\begin{array}{ll}\text { ID: } & \text { BB } \\ \text { Balm Beach }\end{array}$

Rainfall Rates (tenths of mm)


Rainfall Rates (tenths of mm)


Rainfall Rates (tenths of mm )


Rainfall Rates (tenths of mm)


Rainfall Rates (tenths of mm)

| Rainfall Rates (tenths of mm ) <br> for Specified Time Interval in Minutes Hourly Rainfal <br> in Specified H |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | 5 | 10 | 15 | 30 | 60 | 120 | 360 | 720 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 |  | otal |
| Day |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4 | 64 | 76 | 78 | 84 | 92 | 92 | 92 | 104 | 0 | 0 | 0 | 0 | 0 | 4 | 88 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 6 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 104 |
| 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11 | 46 | 68 | 106 | 152 | 156 | 164 | 170 | 184 | 2 | 14 | 10 | 8 | 14 | 0 | 0 | 14 | 12 | 2 | 2 | 0 | 0 | 8 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 156 | 8 | 4 | 260 |
| 12 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 14 | 4 | 4 | 4 | 4 | 4 | 4 | 8 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 12 |
| 15 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17 | 4 | 6 | 10 | 16 | 26 | 42 | 82 | 112 | 0 | 0 | 0 | 0 | 0 | 2 | 6 | 10 | 18 | 22 | 10 | 8 | 8 | 12 | 14 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 114 |
| 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 19 | 4 | 4 | 4 | 8 | 10 | 12 | 18 | 22 | 0 | 0 | 0 | 4 | 0 | 0 | 10 | 2 | 2 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 22 |
| 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 22 | 4 | 6 | 8 | 12 | 20 | 36 | 78 | 114 | 0 | 0 | 6 | 10 | 8 | 8 | 18 | 18 | 12 | 10 | 10 | 2 | 0 | 10 | 4 | 4 | 0 | 2 | 6 | 4 | 0 | 0 | 0 | 2 | 134 |
| 23 | 2 | 4 | 6 | 8 | 10 | 20 | 20 | 28 | 2 | 2 | 0 | 2 | 2 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 6 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 8 | 10 | 42 |
| 24 | 2 | 2 | 4 | 4 | 6 | 6 | 10 | 10 | 0 | 0 | 6 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 14 |
| 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 27 | 2 | 2 | 4 | 6 | 6 | 8 | 14 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 2 | 4 | 14 |
| 28 | 4 | 6 | 8 | 14 | 26 | 44 | 70 | 92 | 8 | 16 | 26 | 10 | 4 | 6 | 2 | 0 | 2 | 8 | 2 | 6 | 2 | 2 | 4 | 0 | 0 | 0 | 4 | 4 | 4 | 2 | 2 | 6 | 120 |
| 29 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Rainfall Rates (tenths of mm )


Rainfall Rates (tenths of mm)

| Rainfall Rates (tenths of mm) <br> for Specified Time Interval in Minutes |  |  |  |  |  |  |  |  |  | Hourly Rainfall (tenths of mm) in Specified Hour |  |  |  | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | 5 | 10 | 15 | 30 | 60 | 120 | 360 |  | 0 | 1 | 2 | 3 | 4 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 23 Total |  |
| Day |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3 | 16 | 26 | 28 | 34 | 38 | 38 | 40 | 40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 38 | 0 | 2 | 40 |
| 4 | 4 | 6 | 8 | 14 | 20 | 22 | 40 | 56 | 10 | 2 | 12 | 8 | 4 | 4 | 0 | 2 | 6 | 6 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 62 |
| 5 | 12 | 20 | 22 | 24 | 38 | 42 | 102 | 102 | 2 | 0 | 0 | 0 | 0 | 0 | 16 | 26 | 0 | 22 | 12 | 16 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 104 |
| 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7 | 10 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 20 |
| 8 | 14 | 16 | 24 | 26 | 28 | 28 | 28 | 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 28 |
| 9 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 18 | 12 | 14 | 16 | 16 | 16 | 28 | 28 | 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 2 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 28 |
| 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  |  |  |  |  |  |  | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

Rainfall Rates (tenths of mm )

| Rainfall Rates (tenths of mm) for Specified Time Interval in Minutes |  |  |  |  |  |  |  |  | Hourly Rainfall (tenths of mm) in Specified Hour |  |  |  |  |  |  | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | 5 | 10 | 15 | 30 | 60 | 120 | 360 | 720 | 0 | 1 | 2 | 3 | 4 | 5 | 6 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 23 Total |  |
| Day |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  |
| 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  |
| 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  |
| 4 | 4 | 8 | 12 | 20 | 38 | 58 | 76 | 76 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 8 | 34 | 20 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  |  |
| 5 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  |
| 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  |
| 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  |
| 8 | 20 | 20 | 22 | 36 | 44 | 50 | 50 | 52 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 24 | 8 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 40 | 8 | 0 |  |
| 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10 | 32 | 52 | 66 | 84 | 86 | 168 | 208 | 302 | 0 | 8 | 4 | 16 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 84 | 44 | 44 | 0 | 36 | 0 | 0 | 0 | 72 | 22 | 344 |
| 11 | 10 | 12 | 18 | 22 | 22 | 22 | 22 | 24 | 2 | 0 | 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 26 |
| 12 | 16 | 18 | 18 | 30 | 34 | 34 | 36 | 36 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 34 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 36 |
| 13 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 4 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  |
| 14 | 34 | 66 | 74 | 82 | 82 | 82 | 82 | 122 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 20 | 6 | 2 | 4 | 4 | 0 | 0 | 0 | 0 | 0 | 42 | 40 | 0 | 122 |
| 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  |
| 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  |
| 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  |
| 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  |
| 19 | 40 | 74 | 102 | 138 | 150 | 216 | 262 | 266 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 134 | 38 | 86 | 262 |
| 20 | 6 | 10 | 14 | 22 | 28 | 28 | 28 | 28 | 32 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 32 |
| 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  |
| 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  |
| 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  |
| 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  |
| 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  |  |
| 26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  |
| 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  |
| 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  |  |
| 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  |
| 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  |
| 31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  |  |

Rainfall Rates (tenths of mm ) Hourly Rainfall (tenths of mm )

| Rainfall Rates (tenths of mm ) <br> for Specified Time Interval in Minutes |  |  |  |  |  |  |  |  | Hourly Rainfall (tenths of mm) in Specified Hour |  |  |  |  | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | 5 | 10 | 15 | 30 | 60 | 120 | 360 | 720 | 0 | 1 | 2 | 3 | 4 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 23 Total |  |
| Day |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2 | 192 | 192 | 192 | 192 | 192 | 192 | 192 | 192 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 192 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 192 |
| 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 2 |
| 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16 | 4 | 4 | 4 | 6 | 6 | 6 | 8 | 8 | 0 | 0 | 0 | 0 | 6 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 |
| 17 | 10 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 12 |
| 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 23 | 46 | 84 | 112 | 114 | 118 | 122 | 124 | 212 | 0 | 0 | 0 | 38 | 84 | 0 | 0 | 2 | 0 | 0 | 0 | 2 | 32 | 54 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 214 |
| 24 | 8 | 14 | 22 | 24 | 24 | 28 | 32 | 34 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 22 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 10 | 14 | 8 | 60 |
| 25 | 10 | 18 | 24 | 32 | 40 | 40 | 48 | 56 | 0 | 16 | 20 | 6 | 0 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 18 | 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 88 |
| 26 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Rainfall Rates (tenths of mm )


Rainfall Rates (tenths of mm )


Rainfall Rates (tenths of mm)

| for Specified Time Interval in Minutes |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | 5 | 10 | 15 | 30 | 60 | 120 | 360 | 720 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 |  | otal |
| Day |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1 | 4 | 4 | 8 | 10 | 12 | 14 | 14 | 14 | 0 | 0 | 0 | 0 | 0 | 2 | 6 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 |
| 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10 | 4 | 4 | 4 | 4 | 4 | 4 | 8 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 8 |
| 11 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 2 |
| 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 13 | 4 | 4 | 4 | 4 | 4 | 4 | 6 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 2 | 0 | 0 | 6 |
| 14 | 12 | 14 | 18 | 22 | 24 | 32 | 62 | 64 | 2 | 4 | 2 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 18 | 6 | 12 | 4 | 22 | 0 | 0 | 0 | 84 |
| 15 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 29 | 2 | 2 | 2 | 4 | 4 | 4 | 4 | 6 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 |
| 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |



|  | Rainfall Rates (tenths of mm ) for Specified Time Interval in Minutes |  |  |  |  |  |  |  | Hourly Rainfall (tenths of mm) in Specified Hour |  |  |  |  | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 Total |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | 5 | 10 | 15 | 30 | 60 | 120 | 360 | 720 | 0 | 1 | 2 | 3 | 4 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Day |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5 | 8 | 16 | 24 | 28 | 28 | 32 | 48 | 48 | 0 | 0 | 0 | 0 | 14 | 4 | 0 | 28 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 48 |
| 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17 | 26 | 42 | 54 | 74 | 106 | 122 | 132 | 134 | 6 | 0 | 2 | 2 | 20 | 88 | 14 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 142 |
| 18 | 10 | 12 | 12 | 12 | 12 | 12 | 12 | 14 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 |
| 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 24 | 6 | 10 | 14 | 18 | 18 | 18 | 18 | 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 16 | 2 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 2 | 4 | 2 | 0 | 0 | 30 |
| 25 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 26 | 10 | 14 | 20 | 30 | 46 | 70 | 74 | 76 | 0 | 0 | 0 | 0 | 0 | 0 | 30 | 40 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 76 |
| 27 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 31 | 6 | 10 | 16 | 28 | 48 | 68 | 114 | 120 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 42 | 26 | 4 | 18 | 16 | 8 | 6 | 120 |

Rainfall Rates (tenths of mm)

|  |  | Spe | ed T | e Int | val in | Minute |  |  |  | Spec | Hour |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | 5 | 10 | 15 | 30 | 60 | 120 | 360 | 720 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 |  | otal |
| Day |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1 | 10 | 10 | 10 | 10 | 10 | 12 | 12 | 12 | 10 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 |
| 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4 | 26 | 42 | 44 | 82 | 84 | 84 | 90 | 90 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 4 | 0 | 0 | 0 | 72 | 12 | 0 | 0 | 0 | 90 |
| 5 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10 | 2 | 2 | 2 | 2 | 4 | 4 | 4 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12 | 4 | 8 | 12 | 14 | 14 | 14 | 20 | 22 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 22 |
| 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 19 | 18 | 18 | 20 | 30 | 34 | 38 | 82 | 110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 18 | 0 | 4 | 0 | 34 | 0 | 24 | 12 | 10 | 0 | 4 | 4 | 0 | 0 | 110 |
| 20 | 8 | 12 | 12 | 12 | 12 | 12 | 12 | 14 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 16 |
| 21 | 14 | 14 | 16 | 16 | 18 | 18 | 18 | 18 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 16 | 0 | 0 | 0 | 0 | 20 |
| 22 | 8 | 14 | 20 | 30 | 34 | 36 | 44 | 46 | 0 | 0 | 0 | 4 | 4 | 2 | 34 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 46 |
| 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 24 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 27 | 30 | 42 | 66 | 104 | 144 | 146 | 274 | 274 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 94 | 34 | 8 | 136 | 2 | 0 | 0 | 0 | 274 |
| 28 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 29 | 54 | 74 | 90 | 90 | 90 | 90 | 92 | 92 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 90 | 0 | 0 | 0 | 90 |
| 30 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| 31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |






Rainfall Rates (tenths of mm)

| for Specified Time Interval in Minutes |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | 5 | 10 | 15 | 30 | 60 | 120 | 360 | 720 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 |  | otal |
| Day |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2 | 38 | 74 | 104 | 150 | 174 | 188 | 190 | 210 | 0 | 0 | 0 | 0 | 54 | 0 | 0 | 0 | 2 | 8 | 4 | 0 | 8 | 0 | 0 | 2 | 0 | 0 | 0 | 172 | 16 | 0 | 0 | 0 | 266 |
| 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 14 | 2 | 4 | 6 | 6 | 8 | 8 | 8 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 |
| 15 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 19 | 10 | 18 | 20 | 28 | 36 | 38 | 38 | 38 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 32 | 6 | 38 |
| 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 23 | 8 | 12 | 20 | 30 | 36 | 38 | 62 | 62 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 28 | 8 | 2 | 0 | 22 | 2 | 62 |
| 24 | 4 | 4 | 6 | 8 | 14 | 22 | 22 | 24 | 8 | 8 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 24 |
| 25 | 6 | 10 | 14 | 24 | 40 | 70 | 110 | 114 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 16 | 30 | 40 | 8 | 8 | 6 | 0 | 0 | 114 |
| 26 | 6 | 8 | 8 | 14 | 20 | 34 | 46 | 46 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 12 | 14 | 6 | 0 | 46 |
| 27 | 4 | 6 | 6 | 8 | 12 | 12 | 12 | 12 | 0 | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 |
| 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Rainfall Rates (tenths of mm )

| for Specified Time Interval in Minutes |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | 5 | 10 | 15 | 30 | 60 | 120 | 360 | 720 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 |  | Total |
| Day |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2 | 12 | 18 | 24 | 36 | 50 | 78 | 176 | 182 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 30 | 22 | 16 | 34 | 22 | 50 | 180 |
| 3 | 6 | 10 | 14 | 22 | 34 | 52 | 80 | 114 | 6 | 6 | 10 | 8 | 4 | 2 | 14 | 30 | 14 | 14 | 4 | 0 | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 128 |
| 4 | 4 | 4 | 4 | 6 | 6 | 6 | 8 | 10 | 0 | 0 | 0 | 2 | 0 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 |
| 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 8 | 14 | 16 | 16 | 18 | 18 | 18 | 18 | 0 | 0 | 0 | 0 | 0 | 0 | 16 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 18 |
| 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8 | 28 | 44 | 46 | 46 | 46 | 46 | 50 | 50 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 46 | 0 | 0 | 4 | 50 |
| 9 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12 | 4 | 6 | 8 | 12 | 18 | 30 | 44 | 44 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 16 | 12 | 10 | 6 | 0 | 44 |
| 13 | 4 | 4 | 6 | 8 | 12 | 20 | 24 | 38 | 0 | 0 | 6 | 4 | 4 | 4 | 0 | 0 | 0 | 4 | 12 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 38 |
| 14 | 4 | 4 | 4 | 8 | 10 | 10 | 10 | 10 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 12 |
| 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 18 | 6 | 8 | 10 | 14 | 22 | 36 | 96 | 116 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 18 | 14 | 10 | 18 | 16 | 16 | 12 | 4 | 4 | 0 | 116 |
| 19 | 14 | 18 | 18 | 20 | 20 | 24 | 24 | 26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 18 | 2 | 4 | 0 | 26 |
| 20 | 22 | 30 | 32 | 38 | 50 | 64 | 80 | 102 | 0 | 16 | 36 | 14 | 6 | 0 | 2 | 4 | 20 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 104 |
| 21 | 34 | 44 | 52 | 82 | 124 | 182 | 184 | 184 | 70 | 112 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 184 |
| 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 23 | 14 | 18 | 20 | 26 | 32 | 38 | 38 | 44 | 0 | 26 | 10 | 2 | 0 | 0 | 0 | 2 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 24 | 70 |
| 24 | 12 | 16 | 20 | 22 | 36 | 40 | 80 | 124 | 14 | 16 | 10 | 8 | 0 | 0 | 0 | 8 | 4 | 30 | 8 | 18 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 128 |
| 25 | 6 | 12 | 12 | 12 | 12 | 14 | 14 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 12 | 0 | 0 | 0 | 0 | 14 |
| 26 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| 27 | 24 | 36 | 52 | 54 | 54 | 54 | 64 | 98 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 54 | 0 | 0 | 0 | 0 | 0 | 40 | 4 | 0 | 0 | 98 |
| 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30 | 4 | 6 | 8 | 14 | 22 | 28 | 28 | 36 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 16 | 4 | 0 | 0 | 0 | 0 | 2 | 2 | 4 | 0 | 0 | 0 | 0 | 36 |

Rainfall Rates (tenths of mm ) Hourly Rainfall (tenths of mm )


Rainfall Rates (tenths of mm)



| Rainfall Rates (tenths of mm ) for Specified Time Interval in Minutes |  |  |  |  |  |  |  |  | Hourly Rainfall (tenths of mm ) in Specified Hour |  |  |  |  |  | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 Total |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | 5 | 10 | 15 | 30 | 60 | 120 | 360 | 720 | 0 | 1 | 2 |  | 3 | 4 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Day |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2 | 1021 |  | 102 | 102 | 102 | 102 | 102 | 102 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 102 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 102 |
| 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12 | 6 | 8 | 8 | 8 | 8 | 8 | 10 | 10 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 |
| 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 16 | 2 | 4 | 4 | 6 | 6 | 6 | 6 | 8 | 0 | 0 | 0 |  | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 |
| 17 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 4 |
| 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 23 | 62 | 92 | 96 | 100 | 106 | 108 | 108 | 116 | 0 | 0 | 0 | 96 | 6 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 116 |
| 24 | 34 | 62 | 84 | 100 | 100 | 102 | 112 | 114 | 2 | 0 | 0 |  | 4 | 0 | 0 | 0 | 0 | 96 | 4 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 76 | 26 | 8 | 220 |
| 25 | 12 | 16 | 20 | 26 | 32 | 48 | 78 | 102 | 0 | 16 | 12 | 32 | 32 | 0 | 4 | 14 | 0 | 0 | 0 | 8 | 16 | 0 | 6 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 110 |
| 26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 29 | 8 | 10 | 10 | 10 | 10 | 12 | 18 | 18 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 2 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 18 |
| 30 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Rainfall Rates (tenths of mm )
for sperifle (tenths of mm) Hourly Rainfall (tenths of mm

|  | 5 | 10 | 15 | 30 | 60 | 120 | 360 | 720 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | otal |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Day |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4 | 4 | 6 | 6 | 6 | 8 | 10 | 12 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 6 | 2 | 2 | 12 |
| 5 | 6 | 10 | 12 | 22 | 22 | 22 | 32 | 32 | 0 | 0 | 4 | 6 | 0 | 0 | 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 32 |
| 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10 | 4 | 8 | 10 | 18 | 34 | 46 | 124 | 126 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 34 | 10 | 18 | 22 | 20 | 20 | 126 |
| 11 | 6 | 10 | 16 | 26 | 40 | 60 | 118 | 126 | 20 | 30 | 28 | 26 | 10 | 4 | 2 | 0 | 6 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 32 | 10 | 4 | 0 | 2 | 176 |
| 12 | 4 | 8 | 10 | 12 | 12 | 12 | 12 | 14 | 0 | 0 | 0 | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 |
| 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 14 | 18 | 24 | 24 | 28 | 34 | 36 | 36 | 36 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 32 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 36 |
| 15 | 6 | 10 | 14 | 20 | 26 | 28 | 36 | 36 | 0 | 0 | 0 | 8 | 0 | 22 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 4 | 0 | 0 | 0 | 42 |
| 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 25 | 16 | 32 | 32 | 32 | 32 | 38 | 60 | 66 | 0 | 0 | 0 | 0 | 0 | 0 | 18 | 10 | 6 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 18 | 0 | 32 | 0 | 8 | 2 | 2 | 98 |
| 26 | 4 | 6 | 8 | 14 | 20 | 24 | 30 | 34 | 10 | 14 | 0 | 0 | 0 | 4 | 4 | 2 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 36 |
| 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 28 | 10 | 14 | 16 | 18 | 18 | 18 | 18 | 18 | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 20 |
| 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Rainfall Rates (tenths of mm)


Rainfall Rates (tenths of mm )



Rainfall Rates (tenths of mm)

| Rainfall Rates (tenths of mm) for Specified Time Interval in Minutes |  |  |  |  |  |  |  |  | Hourly Rainfall (tenths of mm) in Specified Hour |  |  |  |  | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | 5 | 10 | 15 | 30 | 60 | 120 | 360 | 720 | 0 | 1 | 2 | 3 | 4 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 23 Total |
| Day |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16 | 6 | 6 | 6 | 6 | 10 | 10 | 16 | 16 | 0 | 6 | 0 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 016 |
| 17 | 6 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 |
| 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 22 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 23 | 68 | 108 | 116 | 124 | 134 | 136 | 136 | 178 | 0 | 0 | 0 | 0 | 134 | 2 | 0 | 0 | 0 | 0 | 2 | 20 | 6 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0178 |
| 24 | 16 | 26 | 30 | 34 | 34 | 34 | 38 | 40 | 2 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 34 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 20 | $10 \quad 78$ |
| 25 | 18 | 32 | 44 | 60 | 62 | 62 | 66 | 76 | 0 | 18 | 38 | 4 | 0 | 2 | 4 | 0 | 2 | 0 | 0 | 2 | 0 | 4 | 58 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0132 |
| 26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 27 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 29 | 2 | 2 | 2 | 2 | 2 | 2 | 4 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 0 |
| 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |




Rainfall Rates (tenths of mm)


Rainfall Rates (tenths of mm)

| Rainfall Rates (tenths of mm) for Specified Time Interval in Minutes |  |  |  |  |  |  |  |  | Hourly Rainfall (tenths of mm) in Specified Hour |  |  |  |  | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | 5 | 10 | 15 | 30 | 60 | 120 | 360 | 720 | 0 | 1 | 2 | 3 | 4 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 23 Total |
| Day |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16 | 6 | 6 | 6 | 6 | 10 | 10 | 16 | 16 | 0 | 6 | 0 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 016 |
| 17 | 6 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 |
| 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 22 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 23 | 68 | 108 | 116 | 124 | 134 | 136 | 136 | 178 | 0 | 0 | 0 | 0 | 134 | 2 | 0 | 0 | 0 | 0 | 2 | 20 | 6 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0178 |
| 24 | 16 | 26 | 30 | 34 | 34 | 34 | 38 | 40 | 2 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 34 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 20 | $10 \quad 78$ |
| 25 | 18 | 32 | 44 | 60 | 62 | 62 | 66 | 76 | 0 | 18 | 38 | 4 | 0 | 2 | 4 | 0 | 2 | 0 | 0 | 2 | 0 | 4 | 58 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0132 |
| 26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 27 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 29 | 2 | 2 | 2 | 2 | 2 | 2 | 4 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 0 |
| 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Rainfall Rates (tenths of mm )

| Rainfall Rates (tenths of mm) for Specified Time Interval in Minutes |  |  |  |  |  |  |  |  | Hourly Rainfall (tenths of mm) in Specified Hour |  |  |  |  |  | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 Total |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | 5 | 10 | 15 | 30 | 60 |  | 360 | 720 | 0 | 1 | 2 | 3 | 4 | 5 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Day |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4 | 4 | 6 | 6 | 10 | 10 | 16 | 22 | 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 4 | 10 | 4 | 22 |
| 5 | 22 | 38 | 46 | 56 | 56 | 56 | 90 | 94 | 8 | 2 | 0 | 26 | 0 | 0 | 56 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 94 |
| 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10 | 6 | 12 | 16 | 28 | 48 | 80 | 176 | 180 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 32 | 16 | 28 | 32 | 46 | 22 | 182 |
| 11 | 8 | 12 | 14 | 22 | 42 | 78 | 134 | 144 | 18 | 36 | 40 | 26 | 8 | 6 | 0 | 0 | 0 | 2 | 4 | 0 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 26 | 16 | 8 | 0 | 0 | 204 |
| 12 | 14 | 26 | 28 | 28 | 28 | 28 | 32 | 32 | 2 | 2 | 0 | 0 | 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 32 |
| 13 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 14 | 28 | 42 | 48 | 60 | 96 | 118 | 120 | 120 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 52 | 66 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 120 |
| 15 | 4 | 8 | 10 | 16 | 16 | 28 | 40 | 40 | 0 | 0 | 0 | 10 | 6 | 12 | 6 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 42 |
| 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 21 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 25 | 12 | 22 | 24 | 32 | 42 | 74 | 78 | 80 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 38 | 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 4 | 34 | 118 |
| 26 | 4 | 6 | 8 | 14 | 18 | 20 | 24 | 34 | 6 | 14 | 0 | 0 | 0 | 4 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 34 |
| 27 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 28 | 18 | 20 | 22 | 22 | 22 | 30 | 30 | 32 | 0 | 0 | 0 | 22 | 8 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 32 |
| 29 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Rainfall Rates (tenths of mm)

| Rainfall Rates (tenths of mm ) <br> for Specified Time Interval in Minutes |  |  |  |  |  |  |  |  | Hourly Rainfall (tenths of mm) in Specified Hour |  |  |  |  | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 Total |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | 5 | 10 | 15 | 30 | 60 | 120 | 360 | 720 | 0 | 1 | 2 | 3 | 4 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Day |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 46 | 78 | 114 | 154 | 156 | 194 | 280 | 452 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 66 | 124 | 6 | 14 | 62 | 8 | 0 | 0 | 0 | 78 | 78 | 16 | 0 | 0 | 30 | 0 | 482 |
| 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 9 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 22 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Rainfall Rates (tenths of mm)

| for Specified Time Interval in Minutes |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | 5 | 10 | 15 | 30 | 60 | 120 | 360 | 720 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 |  | otal |
| Day |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1 | 4 | 4 | 8 | 10 | 12 | 14 | 14 | 14 | 0 | 0 | 0 | 0 | 0 | 2 | 6 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 |
| 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10 | 4 | 4 | 4 | 4 | 4 | 4 | 8 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 8 |
| 11 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 2 |
| 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 13 | 4 | 4 | 4 | 4 | 4 | 4 | 6 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 2 | 0 | 0 | 6 |
| 14 | 12 | 14 | 18 | 22 | 24 | 32 | 62 | 64 | 2 | 4 | 2 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 18 | 6 | 12 | 4 | 22 | 0 | 0 | 0 | 84 |
| 15 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 29 | 2 | 2 | 2 | 4 | 4 | 4 | 4 | 6 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 |
| 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |









Rainfall Rates (tenths of mm)


Rainfall Rates (tenths of mm )

|  | 5 | 10 | 15 | 30 | 60 | 120 | 360 | 720 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 |  | otal |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Day |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2 | 8 | 12 | 16 | 28 | 44 | 78 | 170 | 218 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 28 | 42 | 30 | 14 | 30 | 20 | 24 | 18 | 216 |
| 3 | 6 | 12 | 14 | 20 | 34 | 56 | 100 | 150 | 8 | 14 | 6 | 20 | 2 | 0 | 22 | 22 | 26 | 26 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 4 | 0 | 0 | 0 | 0 | 162 |
| 4 | 12 | 24 | 30 | 34 | 36 | 44 | 66 | 66 | 0 | 2 | 36 | 0 | 8 | 8 | 8 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 68 |
| 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 4 | 6 | 8 | 8 | 8 | 12 | 14 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 4 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 |
| 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8 | 40 | 50 | 50 | 50 | 50 | 54 | 88 | 96 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 2 | 0 | 0 | 50 | 0 | 6 | 32 | 96 |
| 9 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 6 |
| 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12 | 8 | 14 | 18 | 22 | 34 | 40 | 40 | 40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 20 | 18 | 2 | 0 | 0 | 0 | 40 |
| 13 | 6 | 6 | 10 | 14 | 20 | 26 | 38 | 50 | 2 | 16 | 8 | 2 | 6 | 4 | 0 | 0 | 10 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 54 |
| 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 18 | 12 | 18 | 24 | 40 | 46 | 66 | 160 | 192 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 6 | 0 | 2 | 44 | 22 | 18 | 30 | 22 | 24 | 12 | 6 | 2 | 2 | 194 |
| 19 | 4 | 4 | 4 | 6 | 6 | 6 | 6 | 6 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 8 |
| 20 | 2 | 2 | 2 | 2 | 2 | 2 | 4 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| 21 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 22 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 2 |
| 23 | 6 | 10 | 10 | 16 | 26 | 34 | 34 | 34 | 0 | 4 | 4 | 4 | 0 | 0 | 0 | 2 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 24 | 52 |
| 24 | 6 | 6 | 6 | 6 | 12 | 12 | 14 | 18 | 6 | 6 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 18 |
| 25 | 4 | 4 | 4 | 6 | 6 | 6 | 8 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 8 |
| 26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 27 | 24 | 42 | 50 | 56 | 56 | 56 | 60 | 66 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 56 | 0 | 0 | 0 | 0 | 4 | 6 | 0 | 0 | 66 |
| 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30 | 4 | 4 | 4 | 6 | 8 | 8 | 8 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 |


| Rainfall Rates (tenths of mm ) for Specified Time Interval in Minutes |  |  |  |  |  |  |  |  |  | Hourly Rainfall (tenths of mm) in Specified Hour |  |  |  | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 Total |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | 5 | 10 | 15 | 30 | 60 | 120 | 360 | 720 | 0 | 1 | 2 | 3 | 4 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1 | 6 | 12 | 18 | 30 | 42 | 44 | 44 | 44 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 32 | 0 | 0 | 0 | 0 | 0 | 44 |
| 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 2 |
| 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9 | 6 | 12 | 16 | 32 | 56 | 88 | 96 | 106 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 0 | 20 | 54 | 20 | 2 | 106 |
| 10 | 4 | 4 | 6 | 8 | 10 | 10 | 10 | 10 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 |
| 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 14 | 10 | 18 | 26 | 28 | 28 | 28 | 28 | 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 28 | 28 |
| 15 | 18 | 30 | 38 | 56 | 62 | 66 | 70 | 70 | 4 | 0 | 0 | 44 | 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 2 | 10 | 22 | 110 |
| 16 | 4 | 6 | 8 | 12 | 14 | 18 | 22 | 36 | 16 | 6 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 8 | 0 | 12 | 0 | 0 | 0 | 0 | 2 | 2 | 6 | 2 | 0 | 4 | 0 | 64 |
| 17 | 2 | 2 | 2 | 4 | 6 | 6 | 6 | 6 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 |
| 18 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 19 | 4 | 6 | 6 | 10 | 10 | 12 | 12 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 6 | 8 |
| 20 | 4 | 4 | 6 | 10 | 14 | 14 | 14 | 14 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 |
| 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 27 | 14 | 18 | 22 | 32 | 52 | 74 | 96 | 140 | 0 | 0 | 0 | 0 | 30 | 40 | 22 | 4 | 0 | 0 | 0 | 0 | 0 | 4 | 36 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 140 |
| 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Rainfall Rates (tenths of mm )
for Specified Time Interval in Minutes

|  | 5 | 10 | 15 | 30 | 60 | 120 | 360 | 720 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 |  | Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Day |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0 |
| 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0 |
| 3 | 4 | 4 | 8 | 8 | 12 | 12 | 22 | 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 8 | 2 |  | 20 |
| 4 | 8 | 12 | 16 | 22 | 28 | 36 | 46 | 70 | 6 | 4 | 28 | 4 | 4 | 0 | 2 | 4 | 10 | 4 | 4 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 2 |  | 88 |
| 5 | 8 | 14 | 18 | 28 | 44 | 58 | 82 | 82 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 4 | 44 | 14 | 16 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 82 |
| 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0 |
| 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0 |
| 8 | 72 | 1241 | 162 | 184 | 184 | 184 | 184 | 184 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 110 | 74 | 0 | 0 | 0 | 0 | 0 | 0 |  | 184 |
| 9 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 2 |
| 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0 |
| 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0 |
| 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0 |
| 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0 |
| 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0 |
| 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0 |
| 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0 |
| 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0 |
| 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0 |
| 19 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 2 |
| 20 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 2 |
| 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0 |
| 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0 |
| 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0 |
| 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0 |
| 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0 |
| 26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0 |
| 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0 |
| 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0 |
| 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0 |
| 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0 |

Rainfall Rates (tenths of mm)


Rainfall Rates (tenths of mm )


| Rainfall Rates (tenths of mm) for Specified Time Interval in Minutes |  |  |  |  |  |  |  |  |  | Hourly Rainfall (tenths of mm) in Specified Hour |  |  |  |  | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 Total |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | 5 | 10 | 15 | 30 | 60 | 120 | 360 | 720 |  | 0 | 1 | 2 | 3 | 4 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Day |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4 | 6 | 8 | 8 | 10 | 12 | 18 | 24 | 24 |  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 12 | 4 | 24 |
| 5 | 8 | 12 | 16 | 28 | 40 | 48 | 50 | 50 |  | 0 | 0 | 0 | 2 | 0 | 0 | 36 | 4 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 50 |
| 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10 | 6 | 10 | 16 | 26 | 40 | 66 | 140 | 140 |  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 16 | 22 | 24 | 22 | 40 | 138 |
| 11 | 8 | 14 | 20 | 28 | 50 | 82 | 148 | 150 |  | 16 | 46 | 34 | 36 | 10 | 6 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 6 | 10 | 2 | 0 | 0 | 172 |
| 12 | 38 | 70 | 84 | 92 | 92 | 92 | 94 | 94 |  | 2 | 0 | 0 | 0 | 14 | 78 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 94 |
| 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 14 | 8 | 14 | 22 | 24 | 30 | 34 | 34 | 34 |  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 34 |
| 15 | 14 | 26 | 38 | 58 | 64 | 68 | 72 | 72 |  | 0 | 0 | 0 | 0 | 0 | 56 | 12 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 74 |
| 16 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 25 | 16 | 24 | 28 | 30 | 34 | 66 | 66 | 66 |  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 32 | 34 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 72 |
| 26 | 4 | 6 | 8 | 12 | 18 | 20 | 22 | 30 |  | 8 | 12 | 0 | 0 | 0 | 2 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 32 |
| 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 28 | 10 | 18 | 20 | 20 | 20 | 20 | 20 | 20 |  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 20 |
| 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

## APPENDIX 2 Tiny Township Stream Data 2007

| Balm Beach |  | Date | Field Measurements |  |  | DO | pH | $\begin{gathered} \text { E. coli } \\ \text { (per } 100 \mathrm{ml} \text { ) } \end{gathered}$ | $\begin{gathered} \mathrm{SS} \\ (\mathrm{mg} / \mathrm{L}) \end{gathered}$ | Cond. (uS/cm) | pH | Ammonia (mg/L) | Nitrite ( $\mathrm{mg} / \mathrm{L}$ ) | Nitrate ( $\mathrm{mg} / \mathrm{L}$ ) | Phosphate ( $\mathrm{mg} / \mathrm{L}$ ) | T. Phosphat (mg/L) | TKN ( $\mathrm{mg} / \mathrm{L}$ ) |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Station | Location |  | Time | Temp | Conductivity |  |  |  |  |  |  |  |  |  |  |  |  |
| BB4 | Beach -cement bridge | May 302007 (Wednesday) | 11:16 | 12.44 | 553 | 10.18 | 8.08 | 44 | 12.7 | 482 | 8.22 | 0.009 | 0.012 | 2.94 | 0.0078 | 0.025 | 0.55 |
|  | mouth of big balm | June 272007 (Wednesday) | 10:37 | 16.14 | 567 | 9.14 | 8.08 | 4 | 25.5 | 535 | 8.22 | 0.038 | 0.015 | 3.01 | 0.0068 | 0.042 | 0.73 |
|  |  | August 22007 (Thursday) | 11:47 | 20.47 | 487 | 8.08 | 8.52 | 460 | 14.4 | 523 | 8.41 | 0.004 | 0.014 | 3.16 | 0.0065 | 0.045 | 0.65 |
|  |  | August 142007 (Tuesday) | 11:05 | 14.8 | 582 | 9.73 | 8.39 | 400 | 23.6 |  |  | 0.002 | 0.013 | 3.39 | 0.0065 | 0.04 | 0.45 |
|  |  | September 132007 (Thursday) | 10:12 | 12.76 | 566 | 10.7 | 8.39 | 200 | 11.6 | 521 | 8.19 | 0.011 | 0.013 | 2.73 | 0.0058 | 0.024 | 0.54 |
|  |  | September 272007 (Thursday) | 10:38 | 13.05 | 563 | 9.99 | 8.57 | 244 | 10.7 | 518 | 8.33 | 0.002 | 0.012 | 2.88 | 0.0057 | 0.022 | 0.51 |
| BBO | Beach - waist deep water, | May 302007 (Wednesday) | 11:16 | 14.7 | 237 | 11.17 | 8.78 | 12 | 1 | 238 | 8.31 | 0.008 | 0.006 | 0.724 | 0.0014 | 0.01 | 0.19 |
|  | straight out from stream entrance | June 272007 (Wednesday) | 10:40 | 21.41 | 343 | 10.17 | 8.61 | 64 | 2.2 | 217 | 8.28 | 0.026 | 0.007 | 0.414 | 0.001 | 0.005 | 0.15 |
|  | to lake | August 22007 (Thursday) | 11:40 | 16.82 | 591 | 8.02 | 8.38 | 76 | 13.3 | 224 | 8.34 | 0.013 | 0.006 | 0.407 | 0.0009 | 0.016 | 0.48 |
|  |  | August 142007 (Tuesday) | 11:07 | 20.63 | 284 | 9.55 | 8.85 | 400 | 10.5 |  |  | 0.007 | 0.005 | 0.48 | 0.0009 | 0.014 | 0.41 |
|  |  | September 132007 (Thursday) | 10:16 | 14.14 | 512 | 11.47 | 8.56 | 24 | 3.5 | 208 | 8.25 | 0.011 | 0.003 | 0.368 | 0.0007 | 0.005 | 0.17 |
|  |  | September 272007 (Thursday) | 10:38 | 18.2 | 227 | 10.36 | 8.91 | 72 | 4.8 | 225 | 8.23 | 0.007 | 0.003 | 0.42 | 0.0005 | 0.021 | 0.43 |
| B18 | mouth of small balm | May 302007 (Wednesday) | 11:24 | 14.26 | 625 | 10.34 | 8.43 | 36 | 8.6 | 535 | 8.41 | 0.009 | 0.006 | 8.59 | 0.0024 | 0.014 | 0.41 |
|  |  | June 272007 (Wednesday) | 10:51 | 17.3 | 615 | 9.35 | 8.31 | 192 | 52.4 | 566 | 8.35 | 0.035 | 0.006 | 9.36 | 0.0014 | 0.065 | 0.71 |
|  |  | August 22007 (Thursday) | 11:26 | 15.89 | 615 | 8.8 | 8.75 | 156 | 14.1 | 554 | 8.32 | 0.003 | 0.005 | 9.25 | 0.0016 | 0.015 | 0.29 |
|  |  | August 142007 (Tuesday) | 10:50 | 13.34 | 616 | 10.31 | 8.71 | 180 | 12.9 |  |  | 0.002 | 0.003 | 9.63 | 0.0019 | 0.032 | 0.44 |
|  |  | September 132007 (Thursday) | 10:23 | 11.86 | 631 | 11.02 | 8.64 | 100 | 2.2 | 580 | 8.38 | 0.005 | 0.002 | 8.6 | 0.0012 | 0.007 | 0.29 |
|  |  | September 272007 (Thursday) | 10:45 | 12.44 | 620 | 10.72 | 8.76 | 40 | 55.6 | 563 | 8.36 | 0.002 | 0.001 | 9.12 | 0.0005 | 0.065 | 1.01 |
| JP6 | Tiny Beaches Road by Conc. 9 | May 302007 (Wednesday) | 11:31 | 12.62 | 500 | 10.19 | 8.15 | 204 | 6.9 | 433 | 8.26 | 0.016 | 0.005 | 1.55 | 0.0029 | 0.025 | 0.54 |
|  |  | June 272007 (Wednesday) | 10:50 | 15.71 | 515 | 8.98 | 8.16 | 40 | 4.5 | 520 | 8.28 | 0.046 | 0.01 | 2.1 | 0.004 | 0.015 | 0.4 |
|  |  | August 22007 (Thursday) | 11:21 | 16.25 | 579 | 8.01 | 8.47 | 88 | 18.2 | 536 | 8.43 | 0.013 | 0.01 | 2.23 | 0.0051 | 0.029 | 0.49 |
|  |  | August 142007 (Tuesday) | 10:56 | 14.49 | 396 | 9.65 | 8.54 | 64 | 8.7 |  |  | 0.004 | 0.009 | 2.64 | 0.0043 | 0.024 | 0.5 |
|  |  | September 132007 (Thursday) | 10:29 | 12.09 | 554 | 11.17 | 8.55 | 100 | 6.9 | 510 | 8.24 | 0.012 | 0.003 | 1.65 | 0.0035 | 0.024 | 0.54 |
|  |  | September 272007 (Thursday) | 10:50 | 13.4 | 569 | 9.89 | 8.67 | 64 | 9.6 | 524 | 8.39 | 0.007 | 0.002 | 1.95 | 0.0038 | 0.011 | 0.46 |
| JP3 | Birchdale Road off of Tiny | May 302007 (Wednesday) | 11:38 | 13.88 | 426 | 10.58 | 8.29 | 80 | 4.3 | 362 | 8.36 | 0.008 | 0.005 | 0.813 | 0.0009 | 0.01 | 0.28 |
|  | Beaches Road | June 272007 (Wednesday) | 11:03 | 16.3 | 443 | 9.73 | 8.32 | 36 | 7.6 | 412 | 8.37 | 0.033 | 0.006 | 0.798 | 0.0012 | 0.012 | 0.23 |
|  |  | August 22007 (Thursday) | 11:15 | 15.64 | 433 | 8.77 | 8.56 | 44 | 6.6 | 415 | 8.46 | 0.002 | 0.003 | 0.78 | 0.0016 | 0.015 | 0.27 |
|  |  | August 142007 (Tuesday) | 10:38 | 13.21 | 444 | 10.39 | 8.59 | 56 | 6 |  |  | 0.002 | 0.003 | 0.803 | 0.001 | 0.009 | 0.25 |
|  |  | September 132007 (Thursday) | 10:35 | 11.3 | 431 | 11.01 | 8.62 | 92 | 6.3 | 401 | 8.26 | 0.005 | 0.001 | 0.761 | 0.001 | 0.011 | 0.31 |
|  |  | September 272007 (Thursday) | 13:40 | 12.21 | 440 | 10.43 | 8.77 | 124 | 5.5 | 409 | 8.39 | 0.002 | 0.001 | 0.818 | 0.0005 | 0.009 | 0.29 |
| BW1 | Bluewater Beach-culvet at the | August 22007 (Thursday) | 10:43 | 14.93 | 497 | 9.35 | 8.35 | 12 | 3.1 | 467 | 8.42 | 0.002 | 0.003 | 1.54 | 0.0134 | 0.02 | 0.26 |
|  | South end of park off of Glen | August 142007 (Tuesday) | 10:08 | 14.96 | 381 | 9.97 | 8.53 | 1400 | 201 |  |  | 0.058 | 0.004 | 1.85 | 0.011 | 0.343 | 1.48 |
|  | Avenue | September 132007 (Thursday) | 10:55 | Dry |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | September 272007 (Thursday) | 11:29 | Dry |  |  |  |  |  |  |  |  |  |  |  |  |  |
| OTBS | Tiny Beaches Road Crossing | May 302007 (Wednesday) | 11:52 | 14.94 | 286 | 9.8 | 8.16 | 44 | 7.8 | 287 | 8.23 | 0.013 | 0.005 | 0.124 | 0.0033 | 0.14 | 0.51 |
|  |  | June 272007 (Wednesday) | 11:13 | 16.55 | 367 | 9.22 | 8.21 | 104 | 3.1 | 342 | 8.26 | 0.06 | 0.009 | 0.24 | 0.0054 | 0.014 | 0.27 |
|  |  | August 22007 (Thursday) | 10:54 | 15.6 | 377 | 8.49 | 8.39 | 104 | 9.5 | 353 | 8.39 | 0.011 | 0.009 | 0.274 | 0.0047 | 0.02 | 0.32 |
|  |  | August 142007 (Tuesday) | 10:24 | 12.51 | 390 | 10.42 | 8.66 | 400 | 2.1 |  |  | 0.004 | 0.007 | 0.341 | 0.0033 | 0.008 | 0.22 |
|  |  | September 132007 (Thursday) | 10:44 | 12.25 | 374 | 11 | 8.55 | 156 | 2.8 | 347 | 8.23 | 0.008 | 0.004 | 0.172 | 0.0052 | 0.021 | 0.31 |
|  |  | September 272007 (Thursday) | 11:06 | 13.25 | 394 | 9.95 | 8.71 | 144 | 1.4 | 367 | 8.36 | 0.003 | 0.003 | 0.231 | 0.0045 | 0.01 | 0.26 |
| WB1 | Oak Street | May 302007 (Wednesday) | 12:08 | 15.85 | 534 | 10.07 | 11.07 | 300 | 11.8 | 465 | 8.38 | 0.02 | 0.006 | 0.878 | 0.0012 | 0.019 | 0.61 |
|  |  | June 272007 (Wednesday) | 11:30 | 18.69 | 528 | 8.52 | 8.18 | 152 | 43.6 | 499 | 8.32 | 0.053 | 0.015 | 2.29 | 0.0086 | 0.075 | 0.65 |
|  |  | August 22007 (Thursday) | 10:04 | 17.85 | 533 | 8.23 | 8.45 | 172 | 27.1 | 493 | 8.46 | 0.005 | 0.009 | 2.41 | 0.0103 | 0.157 | 1.5 |
|  |  | August 142007 (Tuesday) | 9:19 | 15.3 | 529 | 9.79 | 8.53 | 1700 | 19.2 |  |  | 0.003 | 0.007 | 2.6 | 0.0075 | 0.062 | 0.62 |
|  |  | September 132007 (Thursday) | 10:57 | 12.04 | 498 | 11.12 | 8.61 | 400 | 4.3 | 498 | 8.34 | 0.009 | 0.004 | 2.44 | 0.0042 | 0.013 | 0.23 |
|  |  | September 272007 (Thursday) | 11:40 | 13.85 | 524 | 9.85 | 8.78 | 24 | 6 | 485 | 8.43 | 0.002 | 0.002 | 2.54 | 0.004 | 0.02 | 0.35 |
| WB2 | Drain \# 3 | May 302007 (Wednesday) | 12:15 | 12.02 | 332 | 10.24 | 7.96 | 32 | 1.7 | 464 | 8.15 | 0.011 | 0.006 | 0.632 | 0.0051 | 0.045 | 0.77 |
|  |  | June 272007 (Wednesday) | 11:37 | 15.69 | 536 | 9.01 | 8.08 | 16 | 6.7 | 494 | 8.19 | 0.049 | 0.007 | 0.273 | 0.0136 | 0.018 | 0.32 |
|  |  | August 22007 (Thursday) | 9:58 | 15.34 | 562 | 7.46 | 7.81 | 140 | 11 | 517 | 8.31 | 0.011 | 0.007 | 0.121 | 0.0201 | 0.026 | 0.41 |
|  |  | August 142007 (Tuesday) | 9:52 | 14.55 | 571 | 8.92 | 8.31 | 1200 | 26.7 |  |  | 0.009 | 0.004 | 0.094 | 0.0227 | 0.121 | 1.04 |
|  |  | September 132007 (Thursday) | 11:02 | 12.58 | 580 | 10.17 | 8.33 | 40 | 4.6 | 537 | 8.01 | 0.009 | 0.004 | 0.169 | 0.024 | 0.032 | 0.39 |
|  |  | September 272007 (Thursday) | 11:40 | 13.85 | 524 | 9.85 | 8.78 | 12 | 3.4 | 525 | 8.33 | 0.002 | 0.003 | 0.157 | 0.0196 | 0.027 | 0.4 |

## APPENDIX 2 CONT'D Tiny Township Stream Data 2007

| Balm Beach |  |  |  | Field Measurements |  |  |  | $\begin{gathered} \text { E. coli } \\ \text { (per } 100 \mathrm{ml} \text { ) } \end{gathered}$ | $\underset{(\mathrm{mg} / \mathrm{L})}{\mathrm{SS}}$ | Cond. (uS/cm) | pH | Ammonia (mg/L) | $\begin{aligned} & \text { Nitrite } \\ & (\mathrm{mg} / \mathrm{L}) \end{aligned}$ | Nitrate <br> ( $\mathrm{mg} / \mathrm{L}$ ) | Phosphate ( $\mathrm{mg} / \mathrm{L}$ ) | T. Phosphate ( $\mathrm{mg} / \mathrm{L}$ ) | $\begin{aligned} & \mathrm{e} \text { TKN } \\ & (\mathrm{mg} / \mathrm{L}) \end{aligned}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Lafontaine Creek |  | Date |  Field Measurements   <br> Time Temp Conductivity  |  |  | DO | pH | $\begin{gathered} \text { E. coli } \\ \text { (per } 100 \mathrm{ml} \text { ) } \end{gathered}$ | $\begin{gathered} \mathrm{SS} \\ (\mathrm{mg} / \mathrm{L}) \end{gathered}$ | Cond. ( $\mathrm{uS} / \mathrm{cm}$ ) | pH | Ammonia (mg/L) | Nitrite ( $\mathrm{mg} / \mathrm{L}$ ) | Nitrate ( $\mathrm{mg} / \mathrm{L}$ ) | Phosphate (mg/L) | T. Phosphate (mg/L) | $\begin{aligned} & \mathrm{e} \text { TKN } \\ & (\mathrm{mg} / \mathrm{L}) \end{aligned}$ |
| Station | Location |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| LC1 | On beach between the flag poles | May 302007 (Wednesday) | 10:42 | 15.57 | 388 | 10.26 | 8.24 | 248 | 3.7 | 330 | 8.27 | 0.016 | 0.013 | 0.968 | 0.0026 | 0.015 | 0.45 |
|  |  | June 272007 (Wednesday) | 10:19 | 19.4 | 385 | 10.32 | 8.36 | 300 | 8.6 | 378 | 8.31 | 0.039 | 0.02 | 1.39 | 0.0055 | 0.023 | 0.29 |
|  |  | August 22007 (Thursday) | 14:08 | 22.47 | 383 | 12.56 | 8.92 | 196 | 3.8 | 374 | 8.53 | 0.009 | 0.01 | 1.28 | 0.0019 | 0.016 | 0.33 |
|  |  | August 142007 (Tuesday) | 12:38 | 16.89 | 391 | 11.55 | 8.79 | 500 | 8.2 |  |  | 0.012 | 0.009 | 0.992 | 0.0031 | 0.02 | 0.29 |
|  |  | September 132007 (Thursday) | 9:57 | 13.65 | 383 | 10.56 | 8.69 | 500 | 10.9 | 351 | 8.23 | 0.013 | 0.004 | 0.818 | 0.0072 | 0.03 | 0.39 |
|  |  | September 272007 (Thursday) | 10:20 | 14.13 | 403 | 10.81 | 8.74 | 504 | 3.2 | 374 | 8.35 | 0.004 | 0.006 | 1.16 | 0.0025 | 0.017 | 0.32 |
| LC2 | 13th Conc. W side of Tiny Beaches Road bridge crossing mailboxes | May 302007 (Wednesday) | 10:49 | 14.6 | 379 | 10.63 | 8.24 | 96 | 4.8 | 334 | 8.31 | 0.014 | 0.012 | 1.02 | 0.0025 | 0.016 | 0.45 |
|  |  | June 272007 (Wednesday) | 10:09 | 17.26 | 409 | 9.01 | 8.26 | 88 | 6.2 | 378 | 8.27 | 0.039 | 0.02 | 1.59 | 0.009 | 0.025 | 0.25 |
|  |  | August 22007 (Thursday) | 13:50 | 18.44 | 411 | 8.55 | 8.66 | 400 | 5 | 379 | 8.46 | 0.005 | 0.009 | 1.62 | 0.0086 | 0.021 | 0.31 |
|  |  | August 142007 (Tuesday) | 12:30 | 15.72 | 373 | 9.85 | 8.27 | 500 | 9.9 |  |  | 0.004 | 0.008 | 1.26 | 0.0083 | 0.025 | 0.28 |
|  |  | September 132007 (Thursday) | 9:45 | 21.62 | 368 | 11.42 | 8.67 | 900 | 11.9 | 344 | 8.25 | 0.01 | 0.004 | 0.843 | 0.0078 | 0.035 | 0.4 |
|  |  | September 272007 (Thursday) | 10:08 | 13.24 | 394 | 10.64 | 8.73 | 484 | 44 | 365 | 8.32 | 0.002 | 0.004 | 1.26 | 0.0044 | 0.017 | 0.29 |
| LC3 | Main crossing on Conc. 13 | May 302007 (Wednesday) | 12:57 | 13.28 | 437 | 11.24 | 8.13 | 240 | 2.5 | 385 | 8.16 | 0.008 | 0.006 | 0.785 | 0.0046 | 0.02 | 0.33 |
|  |  | June 272007 (Wednesday) | 10:04 | 15.83 | 435 | 9.35 | 8.16 | 400 | 9.4 | 408 | 8.21 | 0.023 | 0.008 | 0.844 | 0.0106 | 0.032 | 0.16 |
|  |  | August 22007 (Thursday) | 13:45 | 18.63 | 432 | 8.42 | 8.53 | 288 | 13.4 | 395 | 8.42 | 0.006 | 0.006 | 0.707 | 0.0169 | 0.028 | 0.16 |
|  |  | August 142007 (Tuesday) | 12:25 | 15.74 | 400 | 10.01 | 8.6 | 400 | 5.9 |  |  | 0.002 | 0.005 | 0.724 | 0.0138 | 0.019 | 0.1 |
|  |  | September 132007 (Thursday) | 9:38 | 11.29 | 424 | 11.32 | 8.53 | 1300 | 3.7 | 397 | 8.21 | 0.008 | 0.002 | 0.676 | 0.0116 | 0.02 | 0.14 |
|  |  | September 272007 (Thursday) | 10:00 | 12.39 | 430 | 10.34 | 8.59 | 1600 | 3.5 | 396 | 8.3 | 0.002 | 0.002 | 0.611 | 0.012 | 0.021 | 0.15 |
| LC4 | Flow Stn. Pennorth Drive off of Tiny Beaches Road | May 302007 (Wednesday) | 10:27 | 14.84 | 356 | 9.92 | 8.18 | 128 | 4.4 | 305 | 8.25 | 0.021 | 0.014 | 1.13 | 0.0026 | 0.015 | 0.46 |
|  |  | June 272007 (Wednesday) | 9:58 | 17.63 | 403 | 9.03 | 8.24 | 248 | 9 | 365 | 8.26 | 0.033 | 0.024 | 1.87 | 0.0086 | 0.03 | 0.34 |
|  |  | August 22007 (Thursday) | 13:42 | 18.14 | 390 | 8.52 | 8.5 | 100 | 5.2 | 370 | 8.45 | 0.006 | 0.012 | 1.89 | 0.0059 | 0.02 | 0.35 |
|  |  | August 142007 (Tuesday) | 12:21 | 15.62 | 384 | 9.82 | 8.6 | 100 | 26 |  |  | 0.002 | 0.009 | 1.46 | 0.007 | 0.03 | 0.35 |
|  |  | September 132007 (Thursday) | 9:34 | 12.79 | 358 | 10.27 | 8.58 | 300 | 13 | 333 | 8.24 | 0.01 | 0.003 | 0.845 | 0.0076 | 0.038 | 0.43 |
|  |  | September 272007 (Thursday) | 9:55 | 13.37 | 382 | 10.4 | 8.63 | 260 | 5.5 | 354 | 8.3 | 0.002 | 0.005 | 1.4 | 0.0034 | 0.016 | 0.36 |
| LC5 | Tiny Beaches Road N bridge crossing between Conc. 13 and 14 th | May 302007 (Wednesday) | 10:20 | 15.63 | 332 | 9.59 | 8.24 | 132 | 7.6 | 284 | 8.24 | 0.023 | 0.014 | 0.955 | 0.0038 | 0.025 | 0.56 |
|  |  | June 272007 (Wednesday) | 9:52 | 18.32 | 370 | 8.09 | 8.15 | 400 | 17.2 | 342 | 8.19 | 0.038 | 0.025 | 1.69 | 0.01 | 0.041 | 0.32 |
|  |  | August 22007 (Thursday) | 13:32 | 20.09 | 375 | 8.61 | 8.55 | 364 | 5.4 | 346 | 8.45 | 0.009 | 0.013 | 1.6 | 0.0055 | 0.022 | 0.39 |
|  |  | August 142007 (Tuesday) | 12:14 | 16.28 | 359 | 10.13 | 8.61 | 600 | 15.8 |  |  | 0.01 | 0.009 | 1.25 | 0.0088 | 0.041 | 0.49 |
|  |  | September 132007 (Thursday) | 9:26 | 12.94 | 347 | 10.93 | 8.52 | 300 | 14.5 | 323 | 8.19 | 0.012 | 0.004 | 0.732 | 0.0081 | 0.035 | 0.4 |
|  |  | September 272007 (Thursday) | 9:44 | 13.5 | 368 | 9.65 | 8.49 | 348 | 11 | 340 | 8.23 | 0.005 | 0.006 | 1.2 | 0.0057 | 0.029 | 0.38 |
| LC6 | Conc. 15 W bridge crossing | May 302007 (Wednesday) | 10:11 | 16.72 | 303 | 10.12 | 8.3 | 340 | 10.7 | 260 | 8.28 | 0.027 | 0.015 | 0.412 | 0.0048 | 0.032 | 0.54 |
|  |  | June 272007 (Wednesday) | 9:45 | 21.21 | 339 | 7.87 | 8.24 | 1500 | 27.5 | 308 | 8.25 | 0.056 | 0.023 | 0.619 | 0.0141 | 0.062 | 0.47 |
|  |  | August 22007 (Thursday) | 13:28 | 23.13 | 349 | 8.29 | 8.72 | 200 | 10.1 | 320 | 8.47 | 0.012 | 0.01 | 0.459 | 0.0126 | 0.043 | 0.6 |
|  |  | August 142007 (Tuesday) | 12:05 | 17.81 | 207 | 9.7 | 8.6 | 700 | 10.4 |  |  | 0.017 | 0.008 | 0.299 | 0.0094 | 0.039 | 0.4 |
|  |  | September 132007 (Thursday) | 9:22 | 13.24 | 330 | 10.8 | 8.37 | 400 | 10.2 | 306 | 8.23 | 0.017 | 0.003 | 0.181 | 0.0071 | 0.033 | 0.4 |
|  |  | September 272007 (Thursday) | 9:42 | 13.8 | 341 | 10.12 | 8.58 | 352 | 7 | 315 | 8.27 | 0.003 | 0.003 | 0.311 | 0.0058 | 0.022 | 0.37 |
| LC7 | Conc. 16 W bridge crossing | May 302007 (Wednesday) | 10:00 | 17.66 | 273 | 8.98 | 7.96 | 72 | 9.9 | 228 | 8.1 | 0.05 | 0.011 | 0.252 | 0.006 | 0.04 | 0.6 |
|  |  | June 272007 (Wednesday) | 9:40 | 22.95 | 157 | 6.04 | 7.92 | 200 | 14.7 | 278 | 8.05 | 0.073 | 0.022 | 0.284 | 0.0142 | 0.059 | 0.59 |
|  |  | August 22007 (Thursday) | 13:22 | 25.59 | 324 | 6.15 | 8.29 | 500 | 9.1 | 293 | 8.28 | 0.028 | 0.011 | 0.078 | 0.013 | 0.05 | 0.6 |
|  |  | August 142007 (Tuesday) | 1:58 | 18.87 | 329 | 8.18 | 8.36 | 600 | 20.3 |  |  | 0.057 | 0.015 | 0.193 | 0.015 | 0.057 | 0.6 |
|  |  | September 132007 (Thursday) | 9:15 | 14.96 | 317 | 10.51 | 8.34 | 112 | 5 | 291 | 8.07 | 0.028 | 0.003 | 0.06 | 0.0041 | 0.029 | 0.43 |
|  |  | September 272007 (Thursday) | 9:34 | 14.45 | 317 | 9.46 | 8.42 | 120 | 2.3 | 292 | 8.19 | 0.013 | 0.003 | 0.12 | 0.0052 | 0.016 | 0.36 |
| LC8 | County Road 6 between the 16th and the 17th | May 302007 (Wednesday) | 9:54 | 15.76 | 265 | 9.56 | 8 | 104 | 11.2 | 224 | 8.07 | 0.031 | 0.008 | 0.466 | 0.0027 | 0.042 | 0.59 |
|  |  | June 272007 (Wednesday) | 9:34 | 19.19 | 301 | 7.75 | 7.94 | 72 | 14.3 | 276 | 8.17 | 0.06 | 0.034 | 0.869 | 0.0035 | 0.047 | 0.43 |
|  |  | August 22007 (Thursday) | 13:14 | 21.08 | 292 | 6.06 | 8.25 | 48 | 22.6 | 266 | 8.3 | 0.009 | 0.01 | 0.659 | 0.0037 | 0.111 | 0.84 |
|  |  | August 142007 (Tuesday) | 11:53 | 18.09 | 287 | 8.85 | 8.43 | 200 | 18 |  |  | 0.02 | 0.01 | 0.645 | 0.0024 | 0.038 | 0.34 |
|  |  | September 132007 (Thursday) | 9:08 | 13.67 | 264 | 9.7 | 8.26 | 92 | 9.4 | 264 | 8.08 | 0.026 | 0.005 | 0.388 | 0.0025 | 0.037 | 0.46 |
|  |  | September 272007 (Thursday) | 9:28 | 14.28 | 287 | 7.45 | 8.36 | 68 | 5 | 270 | 8.2 | 0.017 | 0.005 | 0.527 | 0.0024 | 0.032 | 0.4 |
| LC9 | Conc. 17 E culvert | May 302007 (Wednesday) | 9:40 | 11.77 | 235 | 9.99 | 7.81 | 140 | 10.7 | 210 | 8.07 | 0.011 | 0.004 | 0.334 | 0.0051 | 0.028 | 0.47 |

APPENDIX 2 CONT'D Tiny Township Stream Data 2007

| Balm Beach |  |  | Field Measurements |  |  |  | $\begin{gathered} \text { E. coli } \\ \text { (per } 100 \mathrm{ml} \text { ) } \end{gathered}$ | $\begin{gathered} \mathrm{SS} \\ (\mathrm{mg} / \mathrm{L}) \end{gathered}$ | Cond. (uS/cm) | pH | Ammonia (mg/L) | Nitrite <br> ( $\mathrm{mg} / \mathrm{L}$ ) | Nitrate ( $\mathrm{mg} / \mathrm{L}$ ) | Phosphate ( $\mathrm{mg} / \mathrm{L}$ ) | T. Phosphate ( $\mathrm{mg} / \mathrm{L}$ ) | $\begin{aligned} & \text { TKN } \\ & (\mathrm{mg} / \mathrm{L}) \end{aligned}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Station Location | Date | Time | Temp | Conductivity | DO | pH |  |  |  |  |  |  |  |  |  |  |
|  | June 272007 (Wednesday) | 9:27 | 12.79 | 265 | 9.04 | 7.86 | 300 | 15.2 | 251 | 8.15 | 0.024 | 0.005 | 0.567 | 0.0061 | 0.031 | 0.27 |
|  | August 22007 (Thursday) | 13:08 | 15.6 | 284 | 7.77 | 4:33 | 36 | 8.6 | 247 | 8.31 | 0.002 | 0.004 | 0.561 | 0.0067 | 0.023 | 0.2 |
|  | August 142007 (Tuesday) | 11:44 | 12.29 | 252 | 9.41 | 8.46 | 600 | 24.8 |  |  | 0.002 | 0.003 | 0.552 | 0.0055 | 0.042 | 0.24 |
|  | September 132007 (Thursday) | 9:00 | 10.26 | 242 | 9.97 | 8.12 | 300 | 9.7 | 227 | 8.05 | 0.006 | 0.002 | 0.334 | 0.0055 | 0.025 | 0.43 |
|  | September 272007 (Thursday) | 9:20 | 10.36 | 255 | 9.75 | 8.05 | 176 | 4.3 | 240 | 8.25 | 0.002 | 0.001 | 0.389 | 0.0037 | 0.014 | 0.22 |

