DROUGHT UPDATE >

PULLOUT INSIDE

State of our Streams 2015

WATER QUALITY EDITION

Millstone River

This publication gives a snapshot of two streams in your local water region that have been monitored for the past three years as part of the Community Watershed Monitoring Network. Made possible with community partners including provincial and local government, private forest companies, environmental stewardship organizations and volunteers, this network is coordinated through the RDN's Drinking Water and Watershed Protection (DWWP) Program to monitor water quality in 23 streams across the region.

We are excited to share what we continue to learn about our local water as we work to achieve goals outlined in the DWWP Action Plan. **For more information please visit: www.dwwp.ca**

DRINKING WATER WATERSHED PROTECTION

REGIONAL DISTRICT OF NANAIMO

The Community Watershed Monitoring Network

Program 2 under the Drinking Water and Watershed Protection Action Plan outlines the goal to improve information about the region's water resources in terms of quantity and quality. The Community Watershed Monitoring Network (CWMN) furthers this program action by collecting water quality data to track stream health. Partnership between local stewardship groups, BC Ministry of Environment, Island Timberlands and the RDN DWWP program enables the expansion of monitoring in our region.

Volunteers sample water quality in 17 watersheds at 51 sites. Monitoring occurs:

– 5 consecutive weeks Aug. to Sept. (summer low flow)

– 5 consecutive weeks Oct. to Nov. (fall flush period)

water quality indicators

TURBIDITY

suspended particles in water; linked to higher levels of contaminants

DISSOLVED OXYGEN

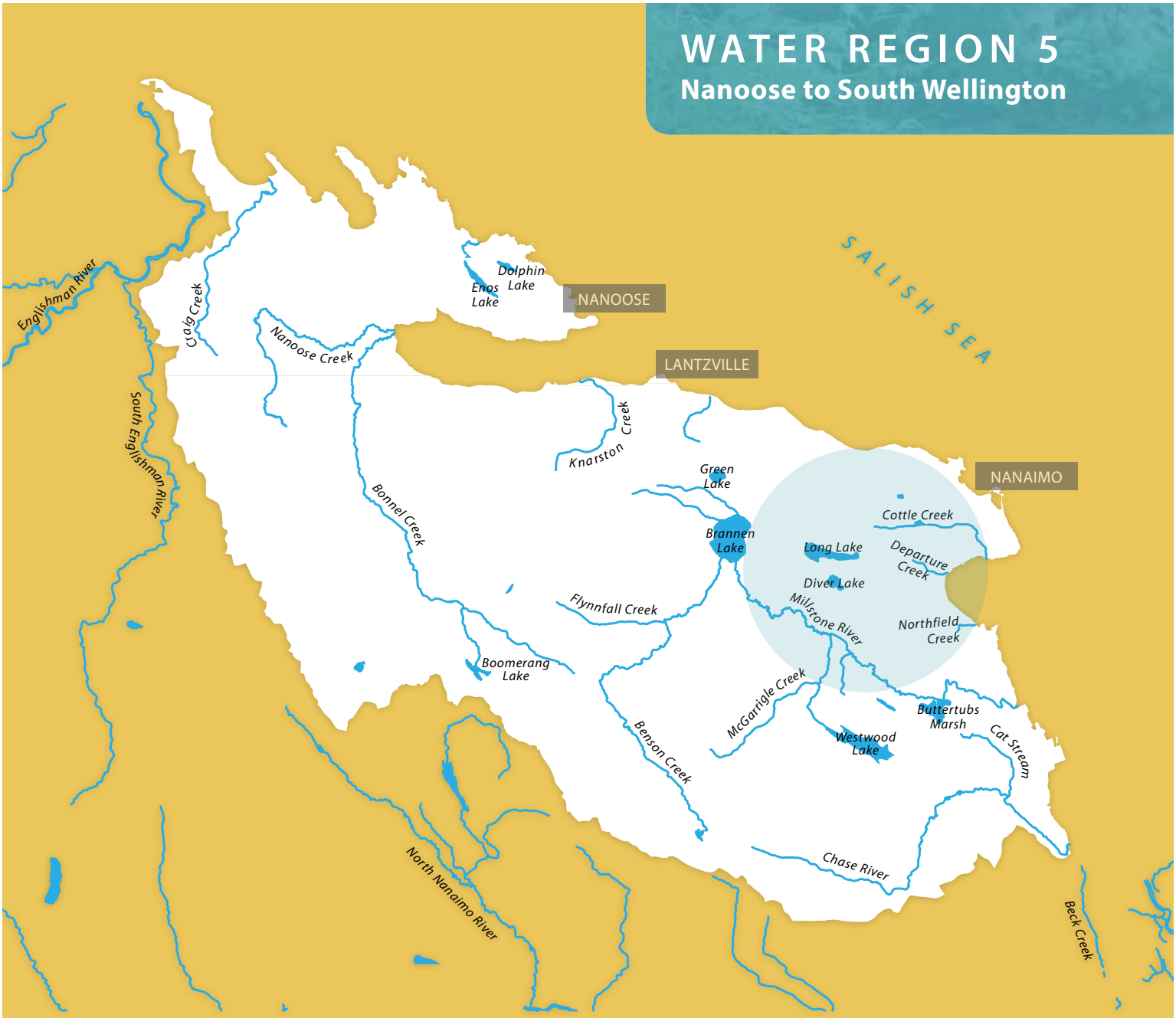
oxygen dissolved in water supports aquatic life

TEMPERATURE

affects processes in water and in aquatic life

This DWWP program is linked to Indicator 5 of our Regional Growth Strategy (RGS) monitoring program which measures progress towards achieving Goal 2 of the RGS: to "protect and enhance the environment and minimize ecological damage related to growth and development". With regard to fresh water, the RGS identifies a strategy to meet this goal, of "protecting the quality and quantity of ground water and surface water". The RGS seeks to maintain the long term sustainability of these water resources. For more information on 'Monitoring the RGS' please visit www.rdn.bc.ca/rgsmonitoring.

WATER REGION 5
Nanoose to South Wellington



1 BIG QUALICUM
2 LITTLE QUALICUM
3 FRENCH CREEK
4 ENGLISHMAN RIVER
5 NANOOSE TO SOUTH WELLINGTON
6 NANAIMO RIVER
7 GABRIOLA ISLAND

There are four major watersheds in Water Region 5:

Nanoose Creek, Bonell Creek, Millstone River and Chase River.

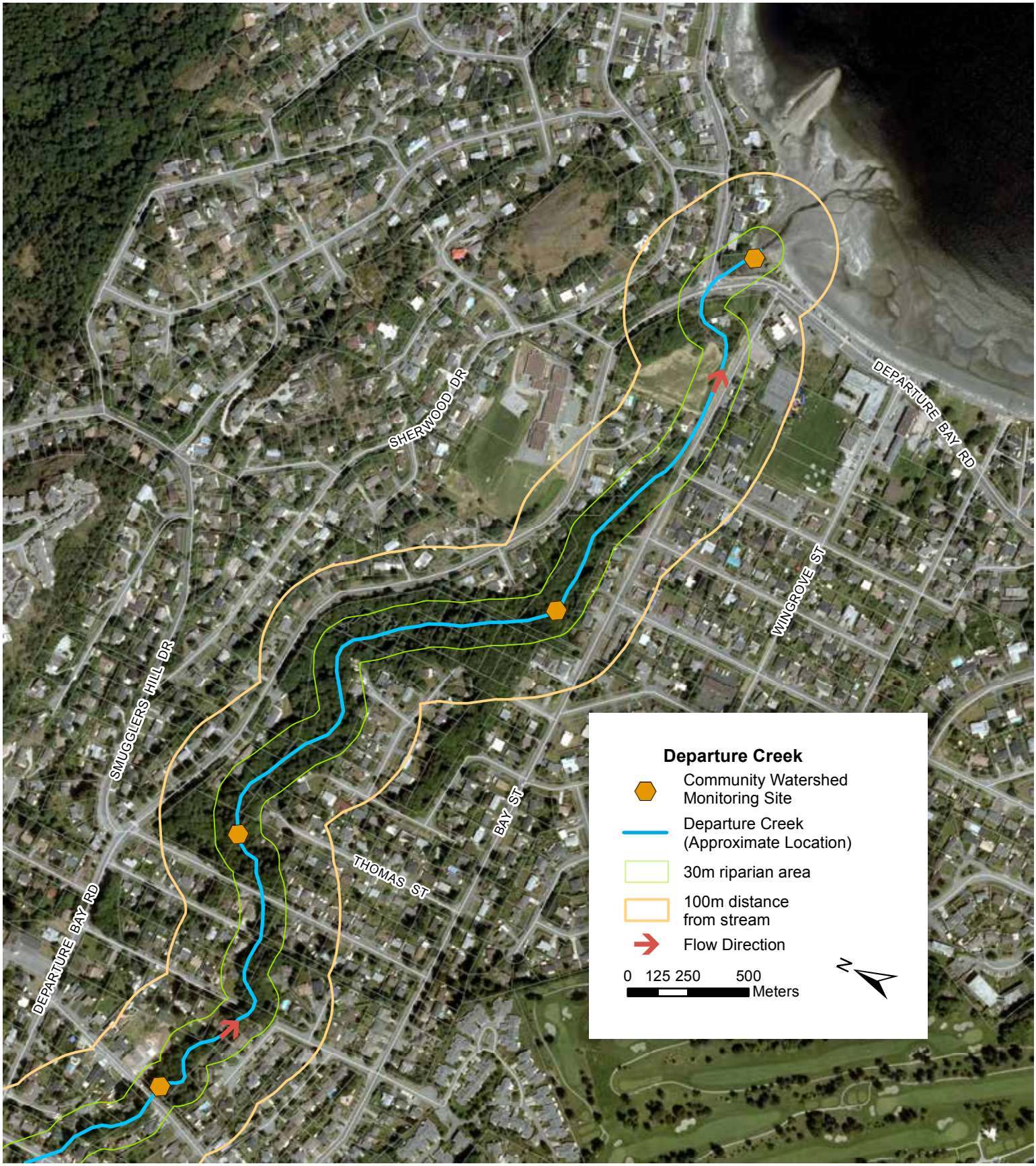
This publication highlights:
Departure Creek & Millstone River

Vancouver Island University's Fisheries and Aquaculture Department, Departure Creek Streamkeepers and Island Waters Fly Fishers complete monitoring in this water region for the CWMN.

For additional streams monitored in this region go to **www.rdn.bc.ca/CWMN**

DEPARTURE CREEK

Monitoring by the Departure Creek Streamkeepers



Challenges

Three sites on Departure Creek are monitored by the CWMN program. Exceedences of the Provincial Water Quality Guidelines for turbidity and temperature were experienced at each of the sites at some point throughout the past three years of monitoring, with more frequent exceedences of guidelines at the lowest sample site. When turbidity spikes occurred they often did not correlate with a precipitation event, which may mean that rainfall runoff is not the source of these particle increases in the water. To understand the cause of the water quality concerns, lab analysis for E.coli, heavy metals and total phosphorous is being conducted by streamkeepers in 2015. Previous lab analysis completed by Vancouver Island University students in 2013 found high fecal coliform counts and aluminum concentrations above guidelines.

Being an urban waterway surrounded by human activity, Departure Creek is continuously at risk of pollutants entering the waterway. Nearly the entirety of this watershed has been developed for housing – roof tops and paved roads have replaced most of the natural vegetation and forest cover. Impervious surfaces and the diversion of stormwater into a network of ditches and storm drains run into the creek causing winter flooding, increasing sedimentation and bank erosion. In addition, local deer populations graze upon young streamside vegetation, limiting recolonization of native bank stabilizing flora.

Details

Departure Creek is within the Snuneymuxw First Nations' traditional territory. Surrounded by suburban development, the approximately three kilometer long Departure Creek has a drainage area of 2.4 square kilometers. Two tributaries feed into this creek, Keighley Creek flowing from the Nanaimo Golf Club and Joseph Creek streaming from a ditch located near Wellington Secondary School. Running all year, the lower 800 meters of Departure Creek are accessible to spawning salmon. Cutthroat trout, pink salmon and a few coho have been spotted in these lower reaches. Viable gravel spawning beds exist throughout Woodstream Park, providing ample shade to the creek. A pervious community walking trail runs through the length of this naturalized area.

Opportunities

Many partners have completed restoration work in Departure Creek since 1995. For instance, 2012 in-stream work included construction of five large woody debris structures to provide protection and shade, two rock weirs to create and maintain pools, and the placement of boulders for bank stabilization and cover. These alterations increased the quality of aquatic habitat, supporting the return of coho spawning in the creek. Visitors to Woodstream Park can do their part to keep the creek clean and healthy by ensuring to take out what they take in, pick up after dogs, and stay on designated trails to decrease bank erosion and support the growth of riparian vegetation. To slow rather than generate rapid runoff, streamside landowners can design their garden space to retain water by mulching their soil, harvesting rainwater and keeping native bankside vegetation. To become active in Departure Creek restoration and monitoring contact the Departure Creek Streamkeepers (volunteer@nalt.bc.ca).

MILLSTONE RIVER

Monitoring by the Island Waters Fly Fishers

Challenges

The CWMN program has three monitoring sites on the main stem of the Millstone River, at Biggs and East Wellington Roads, and at the bottom of Bowen Park in Barsby Park. In all monitoring years the three sample sites on the Millstone River exceeded temperature guidelines at least once in the summer months. Consistent results in the upper two sites showed lower dissolved oxygen levels, possibly due to low flows in the upper reaches. All the sites experienced turbidity spikes, which can negatively affect fish habitat.

During the summer low flow period Brannen Lake provides a significant contribution to the downstream flow in the Millstone River. Potential sources of water quality impacts include livestock entering the watercourse, fertilizer / chemical run-off, sedimentation and destruction of riparian habitat. Urbanized areas, including high traffic roads, increase the potential of extreme flows and the possibility for pollutants such as hydrocarbons and garbage to enter the water. When precipitation events occur, the large amount of impervious surfaces in the watershed convey run-off rapidly to the river potentially introducing contaminants and increasing bank erosion.

Details

The Millstone River is the most urbanized major watershed in our region. Within the Snuneymuxw First Nation traditional territory, the Millstone River watershed has the largest drainage area totaling approximately 100 square kilometers. Originating just West of Mount Benson around Lucid Lake; the uppermost headwaters of Millstone River flow down Benson Creek into Brannen Lake. Altogether the river has a network of 16 tributaries and eight lakes, including Westwood Lake, McGarrigle Creek and Divers Lake. In this watershed, land use includes private forestry operations, agriculture, suburban residential, golf courses and parks. On the Millstone River, within the City of Nanaimo's Bowen Park, a side channel was constructed in 2007 enabling Coho salmon, rainbow and cutthroat trout to travel from the Salish Sea up the entire 14 kilometer length of the river to Brannen Lake.

Opportunities

In Bowen Park, alongside the side-channel to the Millstone River, an interpretive walking trail was created to allow visitors to the park to view salmon and to add the opportunity for an educational experience for community members including students. The addition of spawning gravel and cobble to the stream bottom in the constructed side-channel and the large woody debris that increases instream cover for fish, has greatly improved aquatic habitat values in this part of the river. Together the interpretive trails and the side channel improvements increase public awareness of salmon habitat and local stewardship activities, exemplifying the value of this urban waterway.

Land use activities across the Millstone drainage area can be improved to ensure minimal water quality impacts. Examples include: chemical-free farming and landscaping; preserving vegetated streambanks; stormwater management options to slow run-off such as rain gardens and bioswales; picking up dog waste; and much more. Local stewards work to maintain and create suitable salmonid spawning beds, remove invasive species and monitor annual returns of salmon. Watershed education for residents, visitors, and streamside property owners within this developed watershed is essential to cultivate a sense of pride in our local waterways and maintain their health into the future. To volunteer on Millstone River contact the Island Waters Fly Fishers at rschiefke@shaw.ca.

WORKING TOGETHER

ACTIONS

- Keep stream banks naturally vegetated
- Refrain from chemical use in landscape maintenance
- Pick up after your dog to ensure dog waste stays out of waterways
- Minimize impervious surfaces – deal with rainwater on site to limit what runs-off into the stream, potentially carrying contaminants, contributing to erosion and flash flooding

ACTIVITIES

- Continuous monitoring in local waterways helps to promote watershed health awareness in our communities
- Environmental stewards are trained every year on how to monitor water quality and collect data to provincial standards
- Trend reports created from the first three years of data determine which sites would benefit from additional monitoring
- CWMN results continue to highlight areas for improved watershed management, physical stream assessments, outreach and education

GET INVOLVED

Departure Creek Streamkeepers
operates under auspices of NALT
volunteer@nalt.bc.ca

Lantzville-Nanoose Streamkeepers
nanoosestreamkeepers.blogspot.ca
cpollak@shaw.ca

Nile Creek Enhancement Society
www.nilecreek.org
nile.creek@shaw.ca

Friends of French Creek Conservation Society
www.ffccs.ca
communications@ffccs.ca

Mid-Vancouver Island Habitat Enhancement Society
www.mvihes.bc.ca
info@mvihes.bc.ca

Qualicum Beach Streamkeepers
www.qbstreamkeepers.ca
info@qbstreamkeepers.ca

Island Waters Fly Fishers
www.iwff1.ca
rschiefke@shaw.ca

Nanaimo & Area Land Trust
www.nalt.bc.ca
volunteer@nalt.bc.ca

VIU - Fisheries & Aquaculture Department
www2.viu.ca/fisheries
daniel.fox@viu.ca

For additional monitoring sites, trend reports and program details please visit www.rdn.bc.ca/CWMN

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