

YEAR	Engineering Area	Waterway	Sample Date	Location	Result - reported in mg/kg <i>note: if result below detection limit recorded as 0.001</i>	Exceed limit?
2005	South	Taumatakahu Diquat	? December 2005	Concentrated spray mix	21000mg/L	Y
			? December 2005	Upstream of spray	0.011mg/L	
			? December 2005	Downstream of spray	0.012mg/L	
			? December 2005	Downstream 24 hrs after	0.19mg/L	
	Central	Lower Flemmington Dr: Glyphosate	? December 2005	Concentrated spray mix	21000mg/L	
				Upstream of spray	Not detected	
				Downstream of spray	1.3mg/L	
				Downstream 24 hrs after	Not detected	
2006	South	taumatakahu Diquat	? March 2006	Concentrate mix prior to discharge	21000mg/L	
			? March 2006	Upstream of spray	<0.001 mg/L	
			? March 2006	Downstream of spray	1.2 mg/L	
			? March 2006	Downstream of spray 72hrs	0.034 mg/L	
	Unknown	Glyphosate	? April 2006	Tank mix	4100mg/kg	
				Upstream of spray	0.0020mg/kg	
				Downstream of spray	0.082mg/kg	
				Downstream of spray delay	0.037mg/kg	
2007	South	Taumatahaku Glyphosate	9/02/2007	Before	No residues detected	
			9/02/2007	After	0.061mg/kg	
	Central	Rakaia Glyphosate	10/02/2007	After delay	No residues detected	
			22/02/2007	Before	No residues detected	
			22/02/2007	After	0.011mg/kg	
			14/02/2007	Before	No residues detected	
		Ashburton SB Glyphosate	14/02/2007	Before	No residues detected	
			14/02/2007	After	0.11mg/kg	
			14/02/2007	Before	No residues detected	
			14/02/2007	After	0.049mg/kg	
	South	Orari River	21/03/2007	Before	Below detection limit	
			21/03/2007	After	Below detection limit	
	South	Triclopyr No3 Drain Glyphosate	21/03/2007	After	Below detection limit	
			6/03/2007	After	No residues detected	
	North	Waiau River	1/03/2007	Before	0.011mg/kg	
			1/03/2007	After	No residues detected	
	Central	Parakanoi Drain Glyphosate	? May 2007	Before	0.0028mg/kg	
			? May 2007	After spraying	No residues detected	
			? May 2007	After spraying 24hr delay	No residues detected	
			? April 2007	Before	No residues detected	
	North	S1 Drain Glyphosate	? April 2007	Before	No residues detected	
			? April 2007	After	0.050mg/kg	
	South	Clandeboyne Glyphosate	? April 2007	After 24 hr delay	0.0024mg/kg	
			? March 2007	Before	No residues detected	
? March 2007			After	0.0045mg/kg		
? March 2007			After 24hr delay	0.012mg/kg		
2008	North	Waimakariri River Glyphosate	? March 2008	Upstream pre spray	No residues detected	
			? March 2008	Downstream after spray	0.0024mg/kg	
			? March 2008	Downstream 24 hrs after	No residues detected	
			? March 2008	Upstream pre spray	0.0022mg/kg	
	Central	Ashburton River Glyphosate	? March 2008	Downstream after spray	No residues detected	
			? March 2008	Downstream 24 hrs after	No residues detected	
			? April 2008	Upstream pre spray	No residues detected	
			? April 2008	After spray	No residues detected	
	South	Opihi River Glyphosate	? April 2008	After spray	No residues detected	
			? April 2008	Afterspray delay	No residues detected	
			? March 2008	Before Spray	0.016mg/kg	
			? March 2008	Immediately after spray	0.081mg/kg	
	North	S1 Drain Glyphosate	? March 2008	After spray 24hr delay	0.0097mg/kg	
			? March 2008	Before spray	No residues detected	
			? March 2008	Immediately after spray	0.020mg/kg	
			? March 2008	After spray 24hr delay	0.0032mg/kg	
2009	South	Opihi River Triclopyr	2/04/2009	Upstream	9.0 µg/L	
			2/04/2009	Downstream	8.9µg/L (0.0089mg/L)	
			2/04/2009	Downstream delay	<0.1 µg/L (0.0001mg/L)	
				D/S	0.0090mg/L	
	Central	Rakaia Glyphosate	? Dec 2009	D/S	No residues detected	
			? March 2009	D/S 24hrs after spray	No residues detected	
	North	Ashley Glyphosate	? March 2009	D/S	No residues detected	
South	Seadown Drain Diquat	? Jan 2009	Pre work	<0.001		
		? Jan 2009	Immediately post	0.24 mg/l		
		? Jan 2009	Delay post	0.013mg/l		
2010	South	Waihi Triclopyr	? 03/2010	U/S	<0.1 µg/L	
			? 03/2010	D/S	5.5 µg/L (0.0055 mg/l)	
			? 03/2010	D/S 20 hrs delay	0.13 µg/L (0.0013mg/l)	
	South	Taumatakahu Site 1 Diquat	? March 2010	Upstream	<0.001 mg/l	
			? March 2010	Downstream	1.8mg/l	
			? March 2010	Downstream 23hr delay	0.002mg/l	
			? March 2010	Upstream	<0.001 mg/l	
		Taumatakahu Site 2 Diquat	? March 2010	Downstream	1.8mg/l	
			? March 2010	downstream delay	<0.001mg/l	
			? March 2010	After spray	<0.1 µg/L	
	North	Waiau Triclopyr	? Feb 2010	After spray	0.0018 mg/l	
	Conway Glyphosate	? Feb 2010	After spray	0.0018 mg/l		
2015						
	Central	Rakaia River	19/01/2015	25m d/s pre spray	0.001 N	
			19/01/2015	25m d/s post spray	0.0085 N	
			20/01/2015	25m d/s post spray	0.001 N	
	North	Chatterton River	10/03/2015	Pre spraying	0.001 N	
			10/03/2015	Post spraying	0.86 Y	
	South	Tekapo River	1/04/2015	Upstream	0.001 N	
			2/04/2016	Downstream	0.001 N	
			2/04/2015	Downstream 12-72 hrs	0.001 N	

South	Clandeboyne Drain	16/04/2015	Upstream		0.0022	N
	Clandeboyne Drain	16/04/2015	Downstream		1.8	Y
	Clandeboyne Drain	17/04/2015	Downstream 12-72 hrs		0.037	N
2016						
North	Unknown Drain	Unknown Date	Pre spraying		0.001	N
	Unknown Drain	Unknown Date	Post spraying		0.045	N
Noth	Waiau River	Unknown Date	Pre spraying		0.001	N
	Waiau River	Unknown Date	Post spraying		0.0057	N
WEC	Waimakariri River	1/03/2016	Upstream		0.001	N
	Waimakariri River	1/03/2016	Downstream		0.001	N
	Waimakariri River	3/03/2016	Downstream		0.001	N
Central	Ashburton River	4/03/2016	Upstream		0.0033	N
	Ashburton River	4/03/2016	Downstream		0.028	N
	Ashburton River	6/03/2016	Downstream		0.001	N
Central	Rakaia River	22/01/2016	Upstream		0.001	N
	Rakaia River	22/01/2016	Downstream		0.001	N
	Rakaia River	25/01/2016	Downstream		0.001	N
South	Rangitata River	14/03/2016	Upstream		0.01	N
	Rangitata River	14/03/2016	Downstream		0.01	N
	Rangitata River	16/03/2016	Downstream		0.01	N
2017						
North	Waimakariri River	10/03/2017	Downstream post spray	<0.001mg/L		N
	Glyphosate					
Central	Rakaia River	11/02/2017	Right bank after spray	0.0066mg/kg		N
	Glyphosate		Left bank after spray	0.043mg/kg		N
2018						
Northern	Waimakariri River	12-Mar-18	Downstream	<0.0010mg/kg		N
Southern	Waitaki River	23-Feb-18	Downstream (glyphosate)	<0.0010mg/kg		N
			Downstream (triclopyr)	0.00007g/m3		N
2019						
Northern	Kahutara River	25/01/2019	Downstream immediately post	0.019mg/kg glyphosate		N
River				<0.0010mg/kg AMPA		N
		25/01/2019	Downstream delay post	0.034mg/kg glyphosate		N
				<0.0010 mg/kg AMPA		N
Northern	Waimakariri River	12/02/2019	Downstream	0.079mg/kg Glyphosate		N
River				<0.0010mg/kg AMPA		N
Central	Ashburton River NB	14/02/2019	Upstream pre spray	<0.0010mg/kg AMPA		N
River				<0.0010mg/kg glyphosate		N
	Ashburton River NB	14/02/2019	Downstream post spray	<0.0010mg/kg AMPA		N
				0.23mg/kg glyphosate		Y
Southern	Tekapo River	6/3/2019 8:50am	Upstream pre spray	<0.0010mg/kg		N
River	Glyphosate	6/3/2019 3:30pm	Downstream immediately post	0.0017mg/kg		N
		7/3/2019 8:00am	Downstream delay post	<0.0010mg/kg		N
	Tekapo River	6/3/2019 8:50am	Upstream pre spray	<0.00004 g/m3		N
	Triclopyr	6/3/2019 3:30pm	Downstream immediately post	0.00011g/m3		N
Southern	Clandeboyne Drains	3/4/2019 9:08am	Pre spray	0.12mg/kg		Y but pre spray
Drain	Glyphosate	4/4/2019 2:25pm	Post spray	0.028mg/kg		N
Central	Remmington Creek	17/4/2019 9am	Upstream pre spray	<0.0010mg/kg		N
Drain	Glyphosate	17/4/2019 2pm	Downstream immediately post	0.0047mg/kg		N
		18/4/2019 9am	Downstream delay post	0.012mg/kg		N
Southern	Kellihers Drain	9/12/2019	D/S After Spray	<0.0010mg/kg AMPA		N
Drain	Glyphosate			0.0079 mg/kg glyphosate		N
		11/12/2019	D/S 12-72hr post spray	0.0013 mg/kg AMPA		N
				0.036 mg/kg glyphosate		N
2020						
Northern	S1	15/01/2020	D/S After Spray	0.15 mg/kg		Y
Drain	Glyphosate	16/01/2020	D/S After Spray Delay	0.014 mg/kg		N
	AMPA	15/1/2020 and 16/1/2020	After spray + delay	<0.0020mg/kg		N
	Glyphosate	15/01/2020	25m U/S pre spray	<0.0010 mg/kg		N
	AMPA			<0.0010 mg/kg		N
Northern	Waimakariri River	7/2/2020 2:30pm	25m D/S After Spray	< 0.0010 mg/kg glyphosate		N
River				< 0.0010 mg/kg AMPA		N
Northern	Waiau River	24/2/2020 10:30am	25m U/S pre spray	<0.0010 mg/L AMPA		N
River				<0.0010 mg/L glyphosate		N
		24/02/2020	25m U/S after spray	<0.0010 mg/L AMPA		N
				0.0031 mg/L glyphosate		N
Southern	Tekapo River	26/2/2020 1600	D/S After Spray	<0.0010 mg/L glyphosate		N
River				<0.0010 mg/L AMPA		N
				<0.0004 g/m3 Triclopyr		N
		28/02/2020	D/S After Spray Delay	<0.0004 g/m3 Triclopyr		N
Southern	Waitaki River	11/3/2020 10:49am	D/S After Spray	<0.0010 mg/L AMPA		N
River				0.0031 mg/L glyphosate		N
		11/3/2020 9am	D/S After Spray	0.0012 g/m3 Triclopyr		N
Southern	Donehue Rd Drain	13/10/2020 8:42am	U/S Pre Spray	<0.0010mg/L AMPA		N
Drain				<0.0010mg/L glyphosate		N
		13/10/2020 2pm	D/S After Spray	0.0033mg/L AMPA		N
				0.17 mg/L glyphosate		Y
2021						
Northern	S1	1/02/2021 8:30am	Before spray	AMPA <0.0010mg/L		
Drain				Glyphosate 0.0026mg/L		N
		1/02/2021 8:45am	After spray	AMPA 0.0015mg/L		N
				Glyphosate 0.054mg/L		N
		2/02/2021 8:00am	Next day after spray	AMPA <0.0010mg/L		N
				Glyphosate 0.0046mg/L		N
Northern	Waimakariri	8/3/2021 2:00pm	D/S After Spray	AMPA <0.0010mg/L		N
River	Ground based spray			Glyphosate <0.0020mg/L		N
Northern	Waimakariri	12/3/2021 3:50pm	D/S After Spray	AMPA <0.0010mg/L		N
River	Aerial spraying			Glyphosate <0.0010mg/L		N
Northern	Ashley Rakahuri	22/3/2021 4:00pm	D/S Post Spray	Triclopyr 0.0095g/m3		N
River	Aerial spraying			No 40 day delay sample as no rain		
Central	Rakaia	23/03/2021	D/S After Spray	AMPA <0.0010mg/L		N
River	Aerial spraying			Glyphosate 0.0082mg/L		N
Northern	Ashley Rakahuri	22/3/2021 4:00pm	D/S After Spray	AMPA <0.0010mg/L		N
River	Aerial spraying			Glyphosate <0.0010mg/L		N

Southern River	Waitaki River	8/3/2021 8:30am	D/S After Spray	AMPA <0.0010mg/L	
	Otiake			Glyphosate <0.0010mg/L	N
	Waitaki river	8/3/2021 11am	D/S After Spray	AMPA <0.0010mg/L	
	Van Kloosters			Glyphosate 0.0014mg/L	N

2022

Northern - River	Kaipoi River	20/12/2021 3:00pm	D/S After Spray	Glyphosate <0.0010mg/L AMPA <0.0010mg/L	N
Southern - Drain	Clandeboye Drain	28/01/2022 11:35am	D/S After Spray	Glyphosate <0.0010mg/L AMPA <0.0010mg/L	N
Southern - River	Otaio River	02/03/2022 3:45pm	D/S After Spray	Glyphosate <0.0016mg/L AMPA <0.0010mg/L	N
Southern - River	Lower Waitaki River	17/03/2022 12:00pm	D/S After Spray	Glyphosate <0.0010mg/L AMPA <0.0010mg/L Triclopyr <0.0004g/m3	N N
Northern - River	Waimakariri River	18/03/2022 4:10pm	D/S After Spray	Glyphosate <0.0010mg/L AMPA <0.0010mg/L	N
Southern - River	Rangitata River	04/04/2022 3:15pm	D/S After Spray	Glyphosate <0.0010mg/L AMPA <0.0010mg/L Triclopyr <0.0004g/m3	N N
Northern - Drain	S1 - Drain	11/04/2022 1:00pm	D/S After Spray	Glyphosate <0.0063mg/L AMPA <0.0010mg/L	N
Northern - River	Kowhai River	26/04/2022 4:00pm	D/S After Spray	Glyphosate <0.0010mg/L AMPA <0.0010mg/L	N
Northern - River	Kaipoi River	21/11/2022	D/S After Spray	Glyphosate <0.0010mg/L AMPA <0.0010mg/L	N

2023

Southern - River	Tekapo River	16/2/2023 3:47pm	D/S After Spray	Glyphosate <0.0010mg/L AMPA <0.0010mg/L Triclopyr NOT DETECTED	N N
Southern - River	Waitaki River	17/2/2023 3pm	D/S After Spray	Glyphosate <0.0010mg/L AMPA <0.0010mg/L Triclopyr NOT DETECTED	N N
Southern - River	Ophi River	21/2/2023 9:30am	D/S After Spray	Glyphosate 0.0024mg/L AMPA <0.0010mg/L Triclopyr 0.0013	N N
Northern - River	Waimakariri River	14/03/2023	D/S After Spray	Glyphosate <0.0010mg/L AMPA <0.0010mg/L Triclopyr NOT DETECTED	N N
		22/03/2023	D/S After Spray POST RAIN	Triclopyr NOT DETECTED	N
Southern River	Lower Waitaki	1/3/2023 12:15pm	D/S After Spray	Glyphosate <0.0010mg/L AMPA <0.0010mg/L Triclopyr NOT DETECTED	N N
Central - Drain	Harris	8/3/2023 7:44am	Pre Spray	Glyphosate <0.0010mg/L AMPA <0.0010mg/L	
		8/3/2023 8am	D/S After Spray	Glyphosate 0.0110mg/L AMPA <0.0010mg/L	N
		9/3/2023 8:05am	D/S 12-72 hours After	Glyphosate <0.0010mg/L AMPA <0.0010mg/L	N
Southern - Drain	Clandeboye	10/3/2023 11am	D/S After Spray	Glyphosate <0.0010mg/L AMPA <0.0010mg/L	N
Southern - Drain	Seadown	15/3/23 7:45am	D/S After Spray	Glyphosate <0.0010mg/L AMPA <0.0010mg/L	N
Northern - Drain	S1	17/3/2023 10am	D/S After Spray	Glyphosate <0.0010mg/L AMPA <0.0010mg/L	N
Northern - River	Upper Hurunui	16/3/2023 10am	D/S After Spray	Glyphosate 0.013mg/L AMPA <0.0010mg/L	N
Southern - River	Rangitata	16/3/2023 2pm	D/S After Spray	Glyphosate <0.0010mg/L AMPA <0.0010mg/L Triclopyr NOT DETECTED	N N
Southern - River	Orari	15/03/2023 2pm	D/S After Spray	Glyphosate <0.0010mg/L AMPA <0.0010mg/L Triclopyr NOT DETECTED	N N
Central - Drain	Parakanoi	27/3/2023 10:15am	D/S After Spray	Glyphosate 0.068mg/L AMPA <0.0010mg/L	N
Central - Drain	Parakanoi	28/3/2023 9:30am	D/S After Spray Delay	Glyphosate <0.0010mg/L AMPA <0.0010mg/L	N

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Northern - River	Waipara	1/11/2023 3:18pm	D/S after spray	Glyphosate 0.0120mg/l AMPA <0.0010mg/L	N
Southern - River	Waihao	12/12/2023 2pm	D/S after spray	Glyphosate 0.036mg/L AMPA 0.0011	N

				Triclopyr 0.0029mg/L	N
Southern - River	Tekapo	7/12/2023 9:55am	D/S after spray	Glyphosate <0.0010mg/L AMPA <0.0010mg/L	N
Northern - River	Waiau	14/2/2024 11:30am	D/S after spray	Glyphosate <0.0010mg/L AMPA <0.0010mg/L Triclopyr 0.00090g/m3	N
Southern - River	Orari	23/02/2024 12.42pm	D/S after spray	Glyphosate <0.0010mg/l AMPA <0.0010mg/l Triclopyr 0.00058mg/l	N
Central - River	Rakaia NB	23/02/2024	D/S after spray	Glyphosate <0.0010mg/l AMPA <0.0010mg/l Triclopyr 0.00014mg/l	N

Sampling requirements:

Both CRC981580 (rivers and creeks) and CRC041535 (drains) require sampling. The spray handbook sets out the following sampling regime to ensure compliance with these consents.

FOR RIVER SPRAYING:

A minimum of 5 areas sprayed to be sampled

if **Glyphosate** is used, then sampling must be one immediatly upstream before spraying and one within 25m downstream after spraying is completed. ONLY THE DOWNSTREAM SAMPLE NEEDS TO BE ANALYSED

If **Triclopyr** is used, then sampling is one immediatly upstream before spraying, one within 25m downstream after spraying and another 25m downstream within 40 days after a rainfall event. ONLY THE DOWNSTREAM SAMPLE NEEDS TO BE ANALYSED.

FOR DRAIN SPRAYING:

A minimum of 6 areas sprayed to be sampled.

If **Glyphosate** is used, sampling must be one immediatly upstrea,, one within 25m downstream after spraying and another 25m downstream within 72hrs of spraying completed. ALL SAMPLES MUST BE ANALYSED

If **Triclopyr** is used, then sampling is one immediatly upstream before spraying, one within 25m downstream after spryaing and one 25m downstream within 40 days after a rainfall event. ALL SAMPLES MUST BE ANALYSED.

Check the spray handbook for **Diquat** requirements.

TO ENSURE WE ARE COMPLYING WITH SAMPLE REQUIREMENTS THE FOLLOWING SAMPLING MUST BE DONE:

FOR RIVER SPRAYING:

TWO AREAS in SOUTH

ONE AREA IN CENTRAL

ONE in WAIMAKARIRI

ONE AREA in NORTH

FOR DRAIN SPRAYING:

TWO areas in SOUTH

TWO areas in CENTRAL

ONE are in WAIMAKARIRI

ONE are in NORTH

This is indicated on the annual spray programme which will be sent to you mid May please scheudle this into your diaries so you know what you should be sampling when spraying.

WATER QUALITY LIMITS:

CRC981580

in water 25m downstream

- Glyphosate 0.1g/m3

- Triclopyr 0.01g.m3

CRC041535

in water 25m downstream

- Glyphosate 0.1g/m3

- Triclopyr 0.01g/m3

- Diquat 0.01g/m3