BACKWASH

Reverse Reverb & Creative Transition Processor

A JSFX plugin for REAPER.



MANUAL

by vislov · Version 1.0 · November 2026

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Introduction

Thanks for using **Backwash**!

Reversed reverb is one of the oldest tricks in the studio: a sound is played backwards through a reverb, so its tail *grows* into the note instead of fading after it. It is the sound behind countless vocal swells, drum build-ups and transitions. Backwash makes that trick a one-click job, and then goes a lot further.

Capture any sound straight from your track, pick a reverb type and a length (locked to your project tempo if you like), and Backwash builds the reversed swell for you. Then shape it with the Tone controls, a filter with a movable bell, and a chain of **seven effects** — pitch riser, saturation, sweep, modulation, tremolo, auto pan and bitcrusher — that you can reorder freely. Play the result live from a button or a MIDI note, or print it to the timeline with a single click.

How it works

- **Capture.** Backwash records the audio that passes through it (up to 6 seconds). Recording starts by itself as soon as sound arrives.
- **Select.** You choose which part of the capture is used with two markers. Only the first part of the selection (the *Audio Source*, 250 ms by default) is fed into the reverb.
- **Reverse.** The reverb tail is rendered, reversed, and fitted to the length you chose, so that it builds up and ends at its loudest point.
- **Shape.** The result is polished with the Tone controls, the Filter and the effect chain. Every change is rendered automatically and shown in the lower waveform.
- **Use.** Trigger it with PLAY or a MIDI note (MIDI on), or send it to a track with SEND TO TRACK.

> **Your original signal is untouched**
> Backwash adds the reverse swell *on top of* the audio that passes through it. Your dry signal and any incoming MIDI continue to the output unchanged.

Installation

Backwash is a JSFX plugin, so it runs inside **REAPER** (Windows, macOS and Linux). It consists of two parts:

- **The plugin** (**Backwash.jsfx**) — the effect you load on a track.
- **The receiver script** (**backwash_receiver.lua**) — a small background script that powers the SEND TO TRACK button. Everything else works without it.

Installing from a REAPER package

If you installed Backwash from a package, both files are installed together. The first time the script runs it asks once whether it should start automatically with REAPER. Choose **Yes** and you never have to think about it again. If you choose **No**, you can run the script manually from the Action list whenever you want to use SEND TO TRACK.

Manual installation

- Copy **Backwash.jsfx** into the **Effects** folder of your REAPER resource path (Options → Show REAPER resource path in explorer/finder).
- Restart REAPER or reload the effect list, then add **Backwash (vislov)** to a track from the FX browser.

- For SEND TO TRACK: open **Actions → Show action list → New action → Load ReaScript…**, pick **backwash_receiver.lua** and run it. Answer the start-up question when it appears.

> **Window size**
> Backwash opens at 1000 × 794 pixels. The whole interface scales smoothly when you resize the window, so you can make it as large or as small as you like.

Quick Start

1 **Add Backwash to a track**
Put the plugin on the track that carries the sound you want to turn into a swell (a vocal word, a snare hit, a synth stab…).

2 **Press CAPTURE**
The status shows *WAITING FOR SOUND…*. Play the audio. Recording begins by itself when the signal arrives.

3 **Stop the recording**
Press **STOP REC** (it also stops on its own after 6 seconds). Backwash analyses the audio and places the markers on the audible part for you.

4 **Choose the length**
In the **Length** panel pick **SYNC** for a tempo-based length (1/16 bar to 2 bars) or **TIME** for milliseconds.

5 **Listen**
Press **PLAY** (or switch on **MIDI** and play a MIDI note) to hear the reversed swell. Click the lower waveform to hear it followed by the original sound.

6 **Shape it**
Try another reverb type, change Fade In, add Filter or switch on effects in the chain.

7 **Print it**
Select a track, put the edit cursor where the sound should land and press **SEND TO TRACK**. The swell is placed so that it ends exactly at the cursor.

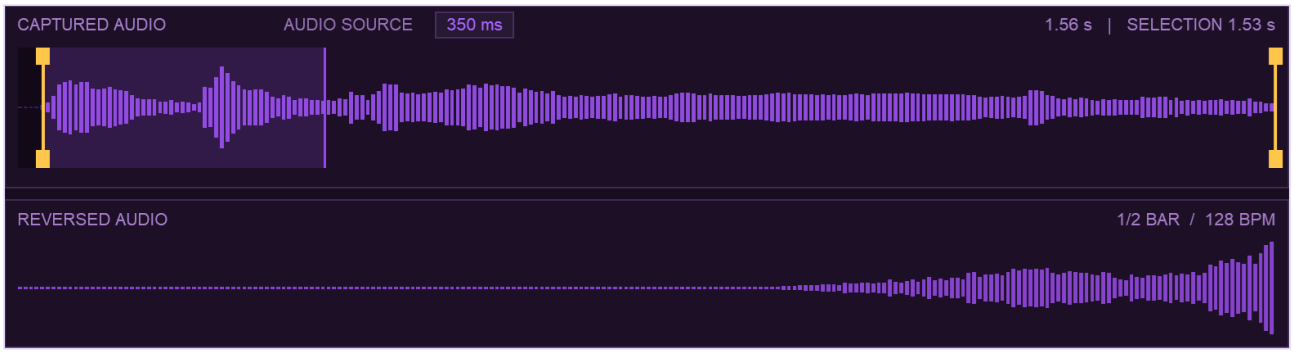
Interface Overview



The Backwash interface. Numbers refer to the list below.

#	Section	Description
1	**Title and status**	Shows the current state: *NO CAPTURE*, *WAITING FOR SOUND…*, *RECORDING*, *ANALYZING…*, *RENDERING REVERB*, *APPLYING FX* or *READY*. Click the title to reset the plugin; click *by vislov* for the About window.
2	**Captured Audio**	The recorded sound with the two markers that select the part to be used. The length of the capture and of the selection is shown at the right.
3	**Audio Source**	How many milliseconds of the selection (counted from the start marker) go into the reverb.
4	**Reverse Audio**	The final result after the effect chain. Click it to preview the swell followed by the original. The current length and the project tempo are shown at the right.
5	**PLAY / LOOP / CAPTURE / MIDI**	Transport buttons of the plugin. MIDI switches the MIDI trigger on and off.
6	**Reverb Type**	Plate, Hall, Room, Chamber or Cathedral.
7	**Length**	How long the swell is — synced to the tempo or in milliseconds.
8	**Tone**	Fade In, Width and Level of the result.
9	**Filter**	High-pass, low-pass and a movable bell filter, drawn as a graph.
10	**Sender**	Prints the result to a track in your project.
11	**Effect Chain**	Seven reorderable effects. Five are visible at a time; use the arrows to see the rest.
12	**Undo / Redo / Help**	Step back and forward through your parameter changes, and show or hide the hints (?).

Capturing Audio



The Captured Audio panel (top) and the Reverse Audio panel (bottom).

The CAPTURE button

Press **CAPTURE** to arm the recorder. The button changes to **CANCEL** and the status shows *WAITING FOR SOUND…*. Recording starts automatically when the signal rises above about −60 dB. Backwash keeps a short pre-roll, so the very beginning (the attack) of your sound is never cut off.

While recording, the button reads **STOP REC**. Press it to finish, or let it run: the recorder stops by itself after **6 seconds**. Pressing CAPTURE again later starts a fresh capture and discards the old one.

Automatic trimming

When the recording ends, Backwash analyses it and moves the two markers to the first and last audible parts, so silence at the start or end is ignored. You can fine-tune the markers at any time.

Markers and selection

- **Drag a marker** (the amber handles) to set the start or end of the selection.
- **Drag between the markers** to move the whole selection without changing its length.
- **Mouse wheel** zooms the waveform; **Shift + wheel** scrolls it horizontally.
- **Ctrl + click** anywhere on the waveform (Cmd on macOS) fits the view to the full capture.

Audio Source

The reverb is not fed with the whole selection — only with its first part, counted from the **start marker**. This length is the **Audio Source** value next to the panel title (10 to 2000 ms, default 250 ms). A short source gives a tight, focused swell around the beginning of a sound; a longer one lets more of the phrase into the reverb. If the markers are closer together than this value, the end marker limits it.

Drag the value up or down to change it. Hold Shift for fine control, Ctrl + click to reset it to 250 ms.

Reverse Audio and Playback

The Reverse Audio panel

The lower waveform is the finished result, **after** the Tone controls, the Filter and the effect chain. It always ends at its loudest point: the swell builds up and stops right at its peak, ready to lead into the original sound. The label at the right shows the length and the tempo it is based on, for example *1/2 BAR / 128 BPM*.

Click the panel to preview the swell *followed directly by the original selection*, starting from the left marker. The join is smoothed with a short crossfade, so it does not click. This is the quickest way to judge how the transition will sound.



PLAY, LOOP, CAPTURE, MIDI and the Reverb Type selector.

Transport buttons

- **PLAY / STOP** — plays the reverse swell from its start. While it plays the button reads STOP.
- **LOOP** — when on, the swell repeats until you stop it.
- **MIDI** — switches the MIDI trigger on or off. While it is on (the indicator lights up), any MIDI note-on arriving at the plugin starts the swell. Use it with a MIDI item on the track or a keyboard. Switch it off to stop notes from triggering the swell, for example while you record or edit MIDI. It is off by default. MIDI is always passed through to the next plugin, on or off.
- **CAPTURE** — see the previous chapter.

> **Playback is independent of the transport**
> The swell starts when you press PLAY or send a MIDI note (with MIDI on) — not when REAPER starts playing. To place a swell at an exact position on the timeline, use SEND TO TRACK.

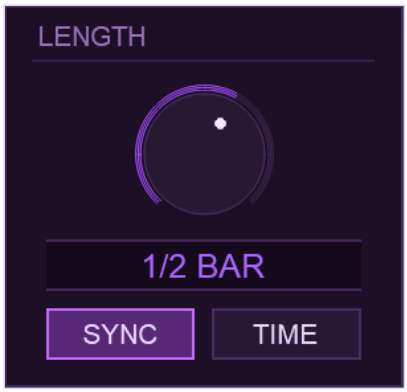
Reverb Type

Use the arrows to choose the room the sound is sent into. The type changes the character of the swell — the size, density and brightness of the space. The duration is always set by Length.

Type	Character
Plate	Compact, dense and bright.
Hall	Large, smooth and open.
Room	The smallest and darkest space; short, natural-sounding swells.
Chamber	A medium space with a warm, controlled tail.
Cathedral	The largest space with the longest, most dramatic decay.

Shaping the Swell

Length

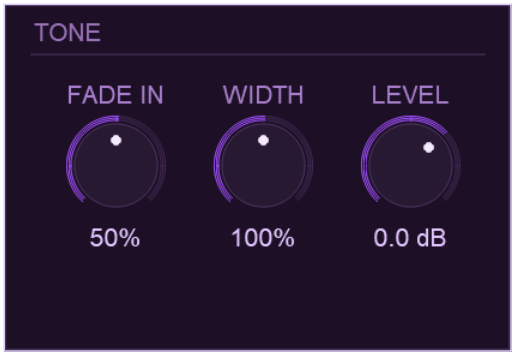


The big knob and the display below it set how long the swell is. Two modes are available:

- **SYNC** — the length is a fraction of a bar: 1/16, 1/8, 1/4, 1/2, 1 or 2 bars. It follows your project tempo and time signature, so the swell always fits the groove. If the host gives no tempo, 120 BPM is assumed.
- **TIME** — the length is set freely from 50 to 6000 ms.

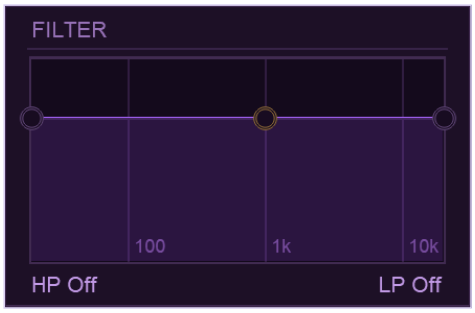
The maximum length is 6 seconds. Very long sync values at slow tempos are limited to that.

Tone



- **Fade In** (0 – 100 %, default 0 %) — how the swell builds. At 0 % the build-up is linear; higher values make it later and sharper.
- **Width** (0 – 200 %, default 100 %) — stereo width of the result. 100 % is the original width, 0 % is mono and 200 % exaggerates the stereo image.
- **Level** (−24 to +12 dB, default 0 dB) — output level of the reverse swell.

Filter

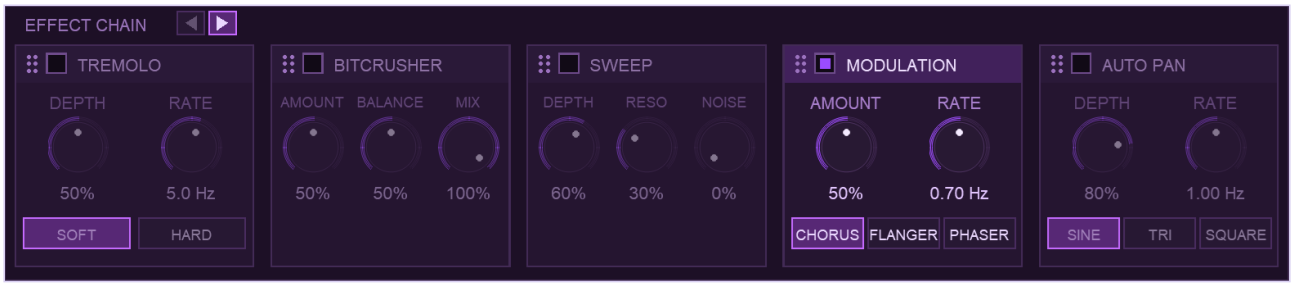


The Filter graph combines three tools in one view. The scale marks 100 Hz, 1 kHz and 10 kHz.

- **HP** (left circle) — high-pass filter, 20 Hz – 2 kHz. Drag it right to remove low frequencies. At the far left it shows *HP Off*.
- **LP** (right circle) — low-pass filter, 500 Hz – 20 kHz. Drag it left to remove highs. At the far right it shows *LP Off*.
- **Bell** (amber circle in the middle) — a peaking filter. Drag **left/right** for its frequency (20 Hz – 20 kHz) and **up/down** for its gain (−30 to +15 dB). Use the **mouse wheel** over the graph to change its width (Q, 0.1 – 10).

Ctrl + click on any point resets it: HP and LP return to Off, and the bell returns to 0 dB.

Effect Chain



The effect chain (two of the seven effects are on the other page, and the cards can be reordered).

Backwash contains seven effects. Each one lives on a card:

- **Checkbox** (left of the name) — switches the effect on or off. Switched-off cards are dimmed.
- **Grip** (the six dots) and the card header — **drag** a card to a new position. The signal flows from left to right, and the order changes the sound: saturation before the bitcrusher is not the same as after it.
- **Arrow buttons** next to the title — only five cards fit on screen. Use the arrows, or the **mouse wheel** over the chain, to see the others.

Only **Modulation** is switched on by default. Any change — switching an effect, moving a knob or reordering cards — is rendered automatically, and the lower waveform updates a moment later. Default order, left to right: Pitch Riser, Saturation, Sweep, Modulation, Tremolo, Auto Pan, Bitcrusher.

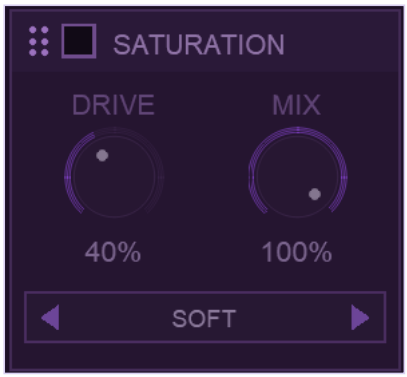
Pitch Riser



Time-warps the swell so that it **starts lower in pitch and climbs to the original pitch** by the end — the classic riser sound. It always arrives at the original pitch, so the swell still leads naturally into your sound.

Parameter	Range	Default	What it does
Pitch	0 – 24 st below	−12 st	The starting pitch, in semitones below the original. The knob shows it as a negative value.
Curve	0 – 100 %	50 %	How the pitch climbs. Low values climb steadily; high values stay low and keep the climb for the very end.

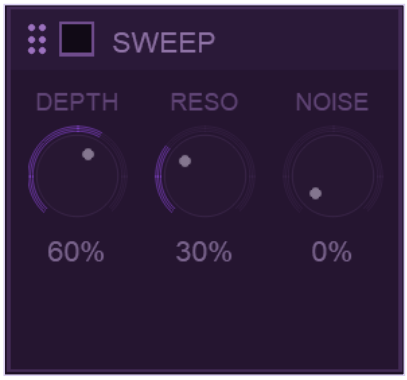
Saturation



Adds harmonics and weight. Choose the character with the type selector at the bottom of the card.

Parameter	Range	Default	What it does
Drive	0 – 100 %	40 %	How hard the signal is pushed into the distortion.
Mix	0 – 100 %	100 %	Blend between the clean and the saturated sound.
Type	Soft / Tube / Hard / Fuzz	Soft	Soft = smooth clipper, Tube = warm asymmetric, Hard = flat-top clipping, Fuzz = heavy asymmetric fuzz.

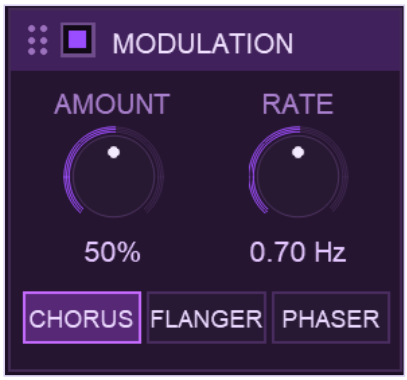
Sweep



A low-pass filter that **opens up as the swell builds**, so the sound starts dark and muffled and becomes brighter towards the end. Add noise for a classic riser texture.

Parameter	Range	Default	What it does
Depth	0 – 100 %	60 %	How far below fully open the filter starts before it opens.
Reso	0 – 100 %	30 %	Resonance (emphasis) of the sweeping filter.
Noise	0 – 100 %	0 %	White noise that follows the loudness of the reversed audio — quiet at the start, loud at the end. The sweep filter shapes it too.

Modulation



Adds movement and width. Pick one of three classic modulation effects with the buttons at the bottom of the card.

Parameter	Range	Default	What it does
Mode	Chorus / Flanger / Phaser	Chorus	Chorus = lush doubling, Flanger = jet sweep, Phaser = swirling notches.
Amount	0 – 100 %	50 %	Depth of the modulation.
Rate	0.05 – 10 Hz	0.70 Hz	Speed of the modulation.

Tremolo



Rhythmic volume pulsing, from gentle shimmer to hard gating.

Parameter	Range	Default	What it does
Depth	0 – 100 %	50 %	How much the volume is reduced on each pulse.
Rate	0.5 – 30 Hz	5 Hz	Speed of the pulses.
Mode	Soft / Hard	Soft	Soft gives smooth pulses. Hard chops the sound fully on and off, like a gate.

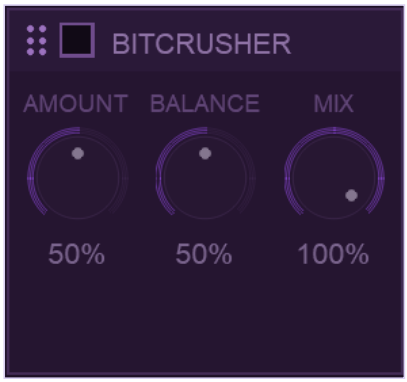
Auto Pan



Moves the sound between the left and right speakers.

Parameter	Range	Default	What it does
Depth	0 – 100 %	80 %	How far the sound travels. 100 % is full left to full right.
Rate	0.05 – 20 Hz	1.00 Hz	Speed of the movement.
Shape	Sine / Tri / Square	Sine	Sine = smooth sweep, Tri = linear sweep, Square = quick jumps between left and right.

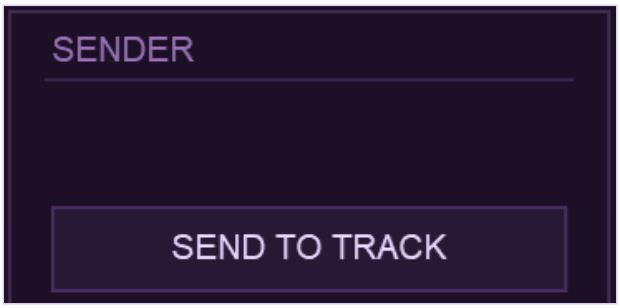
Bitcrusher



Lo-fi digital degradation by reducing the sample rate and the bit depth.

Parameter	Range	Default	What it does
Amount	0 – 100 %	50 %	Total sample-rate and bit-depth reduction.
Balance	0 – 100 %	50 %	How the amount is shared: 0 % = bit depth only, 50 % = both equally, 100 % = sample rate only.
Mix	0 – 100 %	100 %	Blend between the clean and the crushed sound.

Send to Track



SEND TO TRACK prints the finished swell into your project as audio. This is the best way to place a swell at an exact position and to keep it when you share the project.

What happens when you press it

- The Reverse Audio result is saved as a **32-bit float stereo WAV** file in your project folder, named with the date and time. (If the project has no folder yet, a folder inside REAPER’s resource path is used.)
- It is placed on the **selected track**. If no track is selected, a new track called **Backwash** is created.
- The item is positioned so that it **ends at the edit cursor**. The swell builds up to the cursor and your original sound can start right there.
- The waveform is generated immediately, so it is drawn correctly at any zoom level.

Status messages

- **SENDING…** — the data is being copied to the script.
- **WAITING…** — the data is ready and waiting for the receiver script to pick it up.
- **DONE** — the item has been inserted.

There is nothing to send until you have a capture and the Reverse Audio waveform is visible. Pressing the button before that does nothing. If the status stays on WAITING…, the receiver script is not running — see Troubleshooting.

Undo, Hints and About



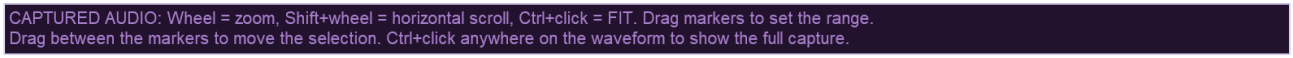
Undo, Redo and the hints button (bottom right).

Undo and Redo

The two arrow buttons at the bottom right step back and forward through your last **32 parameter changes** — knobs, buttons, filter points, effect switches and the order of the effect cards. An arrow is dimmed when there is nothing to undo or redo. The captured audio itself is not part of the history.

Hints

Hover over a control and the **hint bar** at the bottom of the window explains what it does. A few small notes (for example under SEND TO TRACK and above the effect cards) are shown as well. Click the **?** button to hide all of these texts, or to show them again. The choice is saved with the project and with presets.



The hint bar at the bottom of the window describes the control under the mouse.

Reset

Click the **BACKWASH** title to restore every parameter to its factory value and to clear the captured audio, as if the plugin had just been loaded. A fresh Undo history starts from that point.

About and license

Click **by vislov** under the title to open the About window with information about the plugin; click anywhere to close it. Backwash is free to use in personal and commercial audio projects. Please do not sell, rent or charge for it, do not upload or include it in other packs, do not repackage or redistribute the files yourself without written permission, and do not remove the author’s name. Sharing a link to the official source is welcome. Backwash is provided “as is”, without warranty of any kind.

Mouse and Keyboard Reference

Ctrl means the Ctrl key on Windows and Linux and the Cmd key on macOS.

Where	What you can do
Any knob	Drag up / down to change. Shift + drag for fine control. Ctrl + click to reset to the default.
Audio Source value	Drag up / down. Shift + drag = fine. Ctrl + click = reset to 250 ms.
Captured Audio waveform	Wheel = zoom. Shift + wheel = scroll. Ctrl + click = fit the full capture. Drag a marker = set the range. Drag between the markers = move the selection.
Reverse Audio waveform	Click = preview the swell followed by the original.
Filter graph	Drag HP / LP / bell points. Wheel = bell Q. Ctrl + click on a point = reset it.
Effect cards	Click the checkbox = on / off. Drag the header = change the order. Wheel over the chain or the arrow buttons = next / previous page.
PLAY / STOP	Starts or stops the swell.
MIDI button	Click = switch the MIDI trigger on / off.
MIDI note-on	Starts the swell while the MIDI button is on. MIDI is always passed through.
Undo / Redo arrows	Step back / forward through the last 32 parameter changes.
? button	Hide or show the hints.
BACKWASH title	Click = reset all parameters and clear the capture.
by vislov	Click = open the About window; click anywhere to close it.

Tips and Recipes

These are starting points — adjust everything to taste.

Classic vocal swell

Capture a single word or phrase. Use Plate or Hall, Length 1/2 bar or 1 bar in SYNC mode and leave the effects off. Send it to the track with the cursor on the downbeat.

Riser into a drop

Capture a short, bright hit. Switch on **Pitch Riser** (12 st, Curve 50–70 %) and **Sweep** with some Noise. Set Length to 1 or 2 bars.

Wide transition

Use **Modulation** (Phaser) and **Auto Pan** together and raise Width above 100 %.

Lo-fi texture

Switch on **Bitcrusher** and **Saturation** (Fuzz). Try reordering them to hear the difference.

Rhythmic pulse

Use **Tremolo** in Hard mode at a rate that matches your tempo for a gated swell.

Cleaner low end

Pull the **HP** point up to about 100–200 Hz to keep the swell out of the way of your kick and bass.

Triggering from MIDI

Switch on the **MIDI** button and play a note (or use a MIDI item on the track) to fire the swell in time with your music. Switch it off again when you do not want notes to trigger it.

Troubleshooting

Recording never starts after I press CAPTURE.
Backwash starts when the signal is above about −60 dB. Make sure audio is actually reaching the plugin (the plugin records its *input*) and that the track is playing.

The lower waveform is empty.
There is no capture yet, or the result is still being analysed or rendered. Wait until the status shows READY.

SEND TO TRACK stays on WAITING…
The receiver script is not running. Run **backwash_receiver.lua** from the Action list. If it still does not react, check the ReaScript console (View → ReaScript console output) for an error.

The receiver script does not start with REAPER.
Run the script once from the Action list and answer **Yes** to the start-up question. If you declined earlier, add the script to REAPER's start-up actions manually.

MIDI notes do not start the swell.
The MIDI button is off by default. Switch it on (its indicator lights up) and make sure the notes actually reach the plugin, for example from a MIDI item on the same track.

The swell is shorter than the Length I chose.
The maximum length is 6 seconds. At slow tempos, long sync values are limited to that.

The swell sounds different at a different tempo.
In SYNC mode the length follows the project tempo, so the swell is re-rendered when the tempo changes.

Everything was reset and my capture is gone.
Clicking the BACKWASH title resets all parameters and clears the captured audio. Capture the sound again.

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