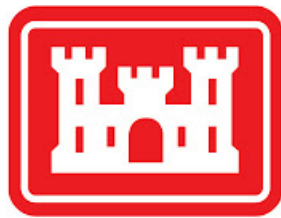


**2017 ANNUAL BIOLOGICAL MONITORING REPORT
FORT ORD DUNES STATE PARK, FORMER FORT ORD, CALIFORNIA**



Prepared for:

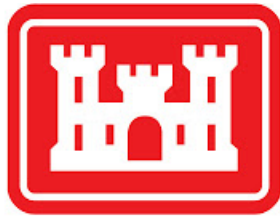
**U.S. Army Corps of Engineers
Sacramento District
1325 J Street
Sacramento, CA 95814-2922**

**Prepared by:
Bart Kowalski
Chenega Support Services**

May 2018

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LIST OF ACRONYMS, ABBREVIATIONS, AND SYMBOLS

PBO	programmatic biological opinion
CDFW	California Department of Fish and Wildlife
FODSP	Fort Ord Dunes State Park
ft ²	square feet
GAC	granular activated carbon
GIS	geographic information system
GPS	global positioning system
GWETS	groundwater extraction and treatment system
HGL	HydroGeoLogic, Inc.
HMP	Habitat Management Plan
OU	operable unit
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service

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1.0 INTRODUCTION

This report describes the methods and results for the 3rd year follow up monitoring of rare plants after the destruction of 21 wells in Sites 2/12, located in Fort Ord Dunes State Park (FODSP), former Fort Ord, California.

The 21 wells destroyed at FODSP were a subset of wells that were no longer needed for collection of groundwater chemical data and/or water level data as part of the groundwater remediation activities at Sites 2/12 (Figure 1). The Army obtained concurrence from the U.S. Fish and Wildlife Service (USFWS) that the removal of 21 wells on State Parks property was not likely to adversely affect listed species if specific avoidance and minimization measures were implemented (USFWS 2014). The well destruction activities are described in the HGL report (HGL 2014). In accordance with the conservation measures outlined in the Programmatic Biological Opinion (USFWS 2017) the Army conducted three years of follow-up monitoring for federally listed species Monterey spineflower (*Chorizanthe p. pungens*) at the locations of destroyed wells to assess the impact of the activity. This report covers the third and final year of follow up monitoring for Monterey spineflower at FODSP.

This report also describes avoidance and minimization measures the Army implemented during removal of granular activated carbon (GAC) from two infiltration galleries that are part of the Sites 2/12 groundwater remediation system (Figure 1). The Army conducted baseline surveys for coast buckwheat and seacliff buckwheat (*Eriogonum latifolium* and *E. parvifolium*) that are host plants for the federally endangered Smith's blue butterfly (*Euphilotes enoptes smithi*), and monitored GAC removal operations to avoid disturbance to these species.

2.0 SITE DESCRIPTION

Fort Ord was established in 1917 as a military training base for infantry troops. In January 1991, the U.S. Secretary of Defense announced the closure of the base. In September 2006, portions of the property were transferred to California Department of Parks and Recreation, and the FODSP was opened to the public in February 2009.

The former Fort Ord is located in the northwestern part of Monterey County, California, on the boundary of Monterey Bay, approximately 80 miles south of San Francisco. FODSP is located along the coast, west of California State Highway 1, between the cities of Marina and Seaside. FODSP includes approximately 990 acres of parkland, including 4 miles of ocean beach. FODSP is characterized by coastal dunes and dune habitat with extensive areas dominated by ice plant

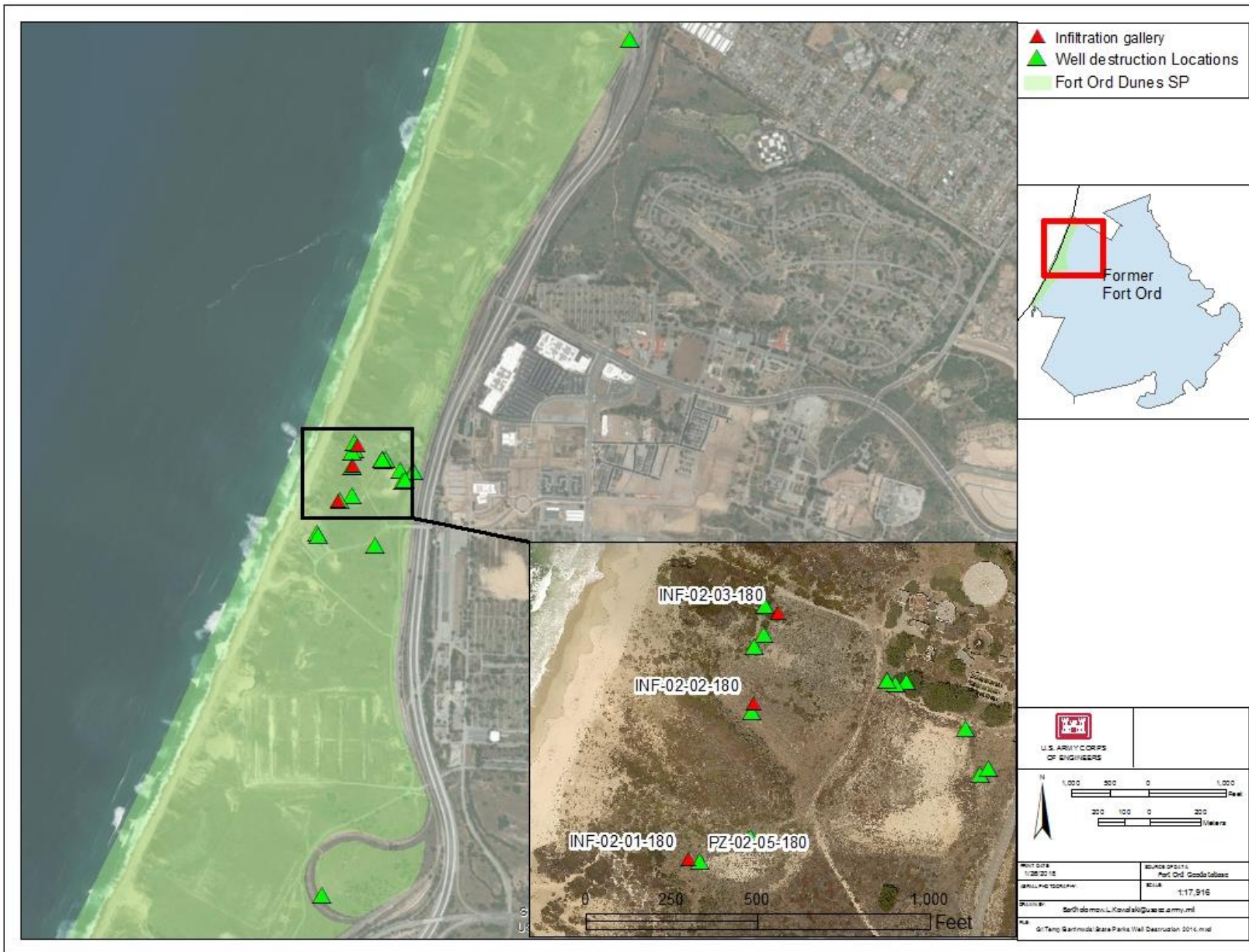


Figure 1. Locations of wells destroyed in 2014 and existing infiltration galleries in Fort Ord Dunes State Park

(*Carpobrotus* species). The area's maritime climate is characterized by cool, overcast, foggy summers, and cool rainy winters, with the warmest days generally occurring in late summer and early fall.

Several federally protected species are known or suspected to be present within the FODSP. These include the federally threatened Monterey spineflower, and the federally endangered Smith's blue butterfly. Several special status plant and animal species are also present in the FODSP and include the following:

- Coast wallflower (*Erysimum ammophilum*);
- Coast buckwheat (*Eriogonum latifolium*);
- Seacliff buckwheat (*Eriogonum parvifolium*);
- California black legless lizard (*Anniella pulchra*) – State Species of Concern

The California legless lizard (*Anniella pulchra*) and coast wallflower (*Erysimum ammophilum*) are species identified in the Habitat Management Plan (HMP, Army 1997), while both buckwheat species are host plants to the endangered Smith's blue butterfly (*Euphilotes enoptes smithi*).

3.0 2017 MONTEREY SPINEFLOWER SURVEYS

3.1 Survey methods

Baseline survey for special status plants in proximity to the 21 wells slated for destruction was conducted on April 28, 2014. The first, second, and third year follow up monitoring was conducted on April 29, 2015; and May 11, 2016; and May 30, 2017, respectively. The surveys were timed to coincide with the peak blooming period which was determined by observing known occurrences of the species in the nearby areas. The third year survey occurred after the peak blooming period, however Monterey spineflower was still recognizable by its long, wiry branching stems.

Each rare plant survey was conducted along proposed access routes and around well locations planned for destruction. The width of the survey area was approximately 30 feet around the wells and beyond the edge of the roadway on either side. If a rare plant was identified, the survey in that area was extended to the boundary of the population encountered.

Large areas of Monterey spineflower were mapped as polygons using a GPS unit. Plant groups of 5 or less were mapped as points with attributes to identify the number of individuals at each location. When a Monterey spineflower was identified, the survey in that area was extended to the boundary of the population encountered. In larger populations, Monterey spineflower was characterized according to the percent of cover; specifically, the percentage of the polygon covered

by the Monterey spineflower divided by the total area enclosed within the polygon. The cover classes are defined as follows:

- Very Sparse (corresponding to an absolute cover of less than 3 percent);
- Sparse (3 to 25 percent);
- Medium Low (26 to 50 percent);
- Medium (51 to 75 percent);
- Medium High (76 to 97 percent); and
- Very High (greater than 97 percent).

3.2 Results

Monterey spineflower was found only in proximity to one well (PZ-02-05-180) on FODSP property during baseline surveys in 2014, thus follow up surveys occurred only at that location. In the 2017 follow up survey there were two Monterey spineflower populations in the Sparse density category covering 17 ft², and two populations in the Very Sparse covering 580 ft². Fourteen additional locations with fewer than 5 plants were identified in the vicinity of the well for a total of 17 plants (Figure 2).

3.3 Discussion

When well destruction efforts were undertaken by HGL in 2014 to remove 21 groundwater within the Sites 2/12 portion of the FODSP, each well was inspected for access to minimize impact to any surrounding vegetation. Well PZ-02-05-180 was a flush mounted well which did not require removal of any well casings or bollards, thus no heavy equipment was utilized near that well. Well destruction activities at well PZ-02-05-180 included the following;

- Conducting baseline surveys for special status species
- Marking the present special status species in the field
- Developing a Habitat Checklist for the field crews
- Giving environmental awareness training to the field crews
- Presence of a qualified biologist overseeing destruction activities
- Staging equipment outside of the areas with special status species
- Pressure filling the well with bentonite using a hose

The results from the third year of monitoring demonstrate that Monterey spineflower continues to occupy the area around the removed well. The two populations in the sparse category covered 17 ft², which is less than 1,036 ft² found during baseline surveys. The two populations in the very

sparse category covered 580 ft², more than 24 ft² found during baseline. Additionally, several single Monterey spineflower plants were found in areas they have not been seen during baseline or during previous follow-up monitoring (Fig 2). These differences likely have not been a result of the well destruction activities, but instead may reflect a natural variation in the population size between years. Monterey spineflower populations densities and cover also decreased in other areas surveyed in 2017 (HGL, 2018; Ahtna, 2017). There are several environmental factors that affect the amount of Monterey spineflower that blooms in a given year, the length of time since El Niño events being an important factor (Fox et al., 2006).

4.0 AVOIDANCE AND MINIMIZATION MEASURES FOR GAC REMOVAL ACTIVITIES

On July 11, 2017 California Department of Parks and Recreation reported to the Army the southernmost Sites 2/12 infiltration gallery INF-02-01-180 was overflowing. INF-02-01-180 was taken offline the same day and was estimated to have been overflowing for approximately three to four days. After the infiltration gallery was drained and inspected, it was observed that GAC had accumulated in the vault above the lateral screen inlets. GAC had likely been transported through the effluent discharge piping and to the infiltration galleries when damage to the effluent tank at the groundwater treatment plant occurred. Treated effluent water discharge was rebalanced to the other two Sites 2/12 infiltration galleries (INF-02-02-180 and INF-02-03-180) and the two OU2 infiltration galleries (INF-OU2-01-180 and INF-OU2-02-180). The flow rate at INF-02-02-180 and INF-02-03-180 was less than normal and it was presumed these two infiltration galleries were likely also impacted by GAC. Ahtna and USACE determined that it was necessary to remove GAC from the infiltration galleries.

GAC removal at infiltration gallery INF-02-02-180 was scheduled for August 22, 2017 to avoid the flight season of the Smith's blue butterfly. Prior to the removal, the area around the infiltration gallery and access routes were surveyed for buckwheat plants. Buckwheat in the vicinity of the gallery and along access routes were mapped and flagged in the field. A habitat checklist was prepared with a map and the field crew was given an overview of the natural resources present and the required minimization measures (Appendix A). Many of the buckwheat plants were located on the actual access road so an alternative route was established to avoid them (Appendix A). A biologist was present during an entire activity and monitored the area to ensure no buckwheat plants were damaged during GAC removal operations.

GAC removal at infiltration gallery INF-02-01-180 was scheduled for November 1, 2017. Same minimization measures as those described above took place at INF-02-01-180. Several buckwheat plants were located at the end of the access road. To prevent damage to these plants, the last stretch of the road was accessed on foot, and temporary t-posts with tape strung between them were installed to create a physical barrier between the buckwheat plants and the access route to the infiltration well (Appendix B).

No Smith's blue butterflies were observed during the activities. All buckwheat plants in the vicinity of the two infiltration galleries were successfully avoided and no additional monitoring is required. Infiltration gallery INF-02-03-180 will be serviced sometime in 2018.

5.0 CONCLUSIONS AND RECOMMENDATIONS

This was the third year of follow up surveys after destruction of 21 wells on FODSP, as required per the 2017 PBO. Baseline surveys indicated Monterey spineflower presence in proximity to one well. Third year follow up survey identified Monterey spineflower covered an area approximately 50% smaller than in the baseline, and the density of the populations were lower than in baseline or in the follow up surveys. While there were no reference sites for the FODSP site, monitoring results of other areas the Army surveyed in 2017 also showed a decrease in Monterey spineflower populations densities and area from previous years (HGL, 2018; Ahtna, 2017). This trend is likely linked to weather and other environmental factors. While the survey protocol required to survey populations of HMP annuals within 30 feet of the destroyed well, the main population had not been affected by the well destruction activities, and no additional surveys are recommended.

Removal of GAC at the two infiltration galleries were successfully completed and no damage to buckwheat plants occurred during these activities. No additional monitoring is required in these areas. Removal of GAC at the third infiltration gallery, INF-02-03-180, will occur in 2018. Although no buckwheat plants were found within the vicinity of this infiltration gallery nor along the access road leading to it (Appendix B), same conservation measures as described in this report will be implemented in the process.

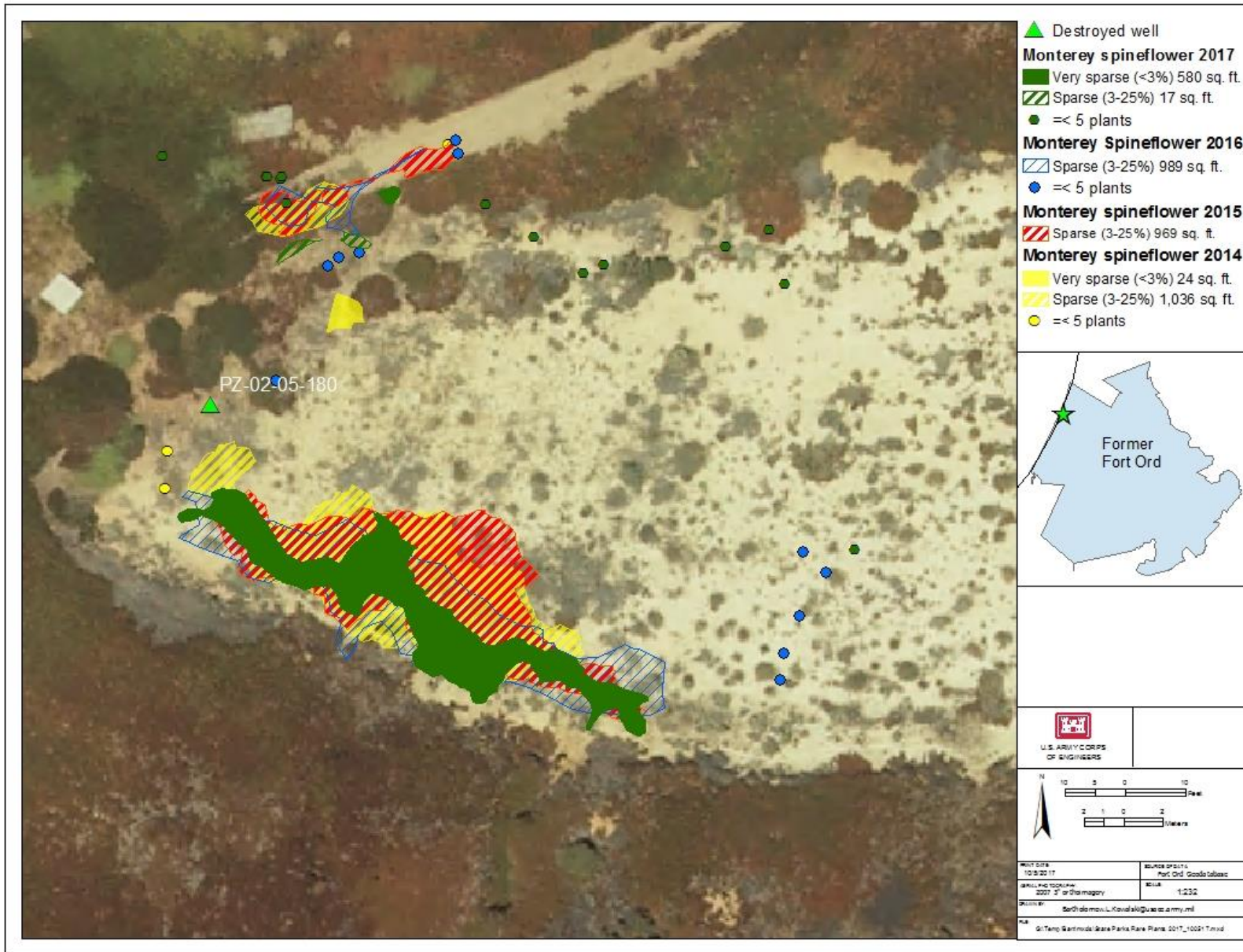


Figure 2. Results of baseline, first, second, and third year follow up monitoring of Monterey spineflower near well PZ-02-05-18

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