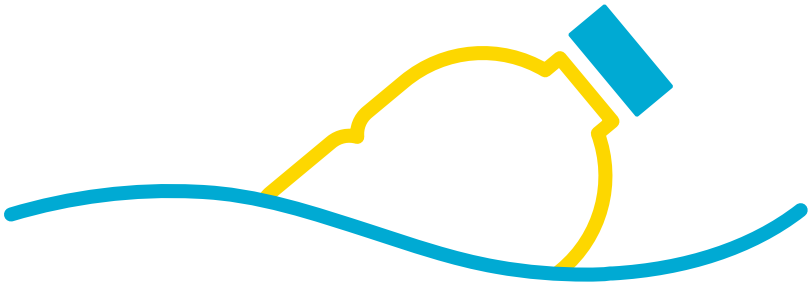
NATIONAL GEOGRAPHIC | GEOCHALLENGE



TACKLING PLASTIC!

2018–2019 PROGRAM GUIDE

Inside the GeoChallenge Program Guide

Coach's Guide

Team Guide

Handouts

COACH'S GUIDE

Tackling Plastic! Overview

Welcome to the GeoChallenge. We're so glad you're joining us to help solve the single-use plastics pollution problem! With *Tackling Plastic!*, your team(s) will explore:

- the urgent issue of plastic pollution in our waterways;
- the source to sea journey of water and plastic pollution in your community; and
- human-supported solutions that can prevent plastics from getting to the ocean.

Project Deliverables

The team's goal is to design, create, and present their own innovative solution for preventing or reducing plastic pollution in our waterways. To be appraised, their final project should include:

- ❑ Solution Summary video (4 min. max.)
- ❑ 4 digital photos of the solution
- ❑ 1 digital photo of the team source to sea map
- ❑ Digital photo/scan of the team's signed Explorer's Code doc
- ❑ Challenge Brief doc
- ❑ Sources List doc

Tackling Plastic! Timeline

2018-19
NOW THROUGH JAN 15
REGISTRATION AND PROJECT WORK
Students form teams, prepare challenge materials, and create GeoChallenge project videos.

2018
SEPT 15
PROJECT SUBMISSION OPENS

2019
JAN 15
PROJECT SUBMISSION CLOSES

2019
MAR 29
REGIONAL COMPETITIONS

2019
LATE SPRING
NATIONAL FINALS

Coach's Role

First and foremost, your role as the Coach is to step back! Work on the GeoChallenge project is student-led. The GeoChallenge Coach assembles the team(s), provides a time and place for the team(s) to work together on a regular basis, makes sure students work safely, and submits the team project(s) to the National Geographic Society for appraisal by January 15, 2019, at 11:59 PM EST. There are helpful details about adult involvement in GeoChallenge work in the 2018-19 Rules & Requirements.

ENGAGE

ENGAGE > THINK > ACT > IMPACT

The *Tackling Plastic!* Team Guide is divided into four phases: ENGAGE, THINK, ACT, and IMPACT. In the following pages, we offer tips and suggestions for how you as the Coach can guide and encourage your team(s) in each phase of their project work.

Suggestions for GeoChallenge Coaches

1. Read through the following Coach pages and the **Team Guide**.
2. Print out the **Explorer's Code** page from the Team Guide (one for each team you are coaching).
   - ❑ Read and discuss the Explorer's Code as a group. Have a signing ceremony so you, each team member, and your school/organization's GeoChallenge Coordinator can sign it.
3. Students should name their team. Encourage them to brainstorm and have fun with it! Please remind them that this is the name that will be used throughout the project. Spelling counts! The team name does not have to be finalized until you submit the team project(s).
4. Reuse an old binder or pick up a spiral-bound notebook to use as the team's workbook. In it, they can keep handouts from the Team Guide and their notes all in one place.
5. These students will be working together A LOT. Consider doing a teamwork icebreaker at your first meeting.
6. At one of your first meetings, review the *Tackling Plastic!* **Rubric** with the team. Consider posting it in their workspace so it is visible as they are working.
7. Be sure to review the **Rules & Requirements** with the team early on in the process.

PRO TIP: It takes all types of learners to complete a GeoChallenge project. Students may want to divide tasks based on their strengths or interests. This is a good time for team members to share talents—are they a technology maven, budding filmmaker, prolific writer, information-seeker, thorough questioner, outgoing spokesperson, creative force, problem solver, big-idea person, or fine-detail type? Or maybe doing a GeoChallenge project will provide some team members the chance to try something new and learn a new skill.

THINK

Plastics in Our Water and Our Lives

In the THINK section, students explore their own watershed "source to sea" and think about single-use plastics at home, at school, and in their community. By the end of the THINK phase, the team will be ready to choose a location in the world for their *Tackling Plastic!* solution.

Some resources are provided in the Team Guide, but students can discover others by searching the internet and the library with your guidance. Don't forget, we've provided a list of related National Geographic resources on the Coach Resource web page (password: plasticpollution).

1. **Learn where and how water flows in your community**

   First, the students learn about their local watershed. We've provided a couple of websites to start the team's exploration:

   - USGS Streamer
   - USGS Science in Your Watershed

   The goal is for students to grasp the source to sea concept that water eventually ends up in the ocean. Therefore, any pollution, including single-use plastics, will as well.

   Some geographic regions in the United States are in endorheic basins (a limited drainage area with no outlet to the sea). If your team is located in an endorheic basin (such as the Great Basin), you may want to explore that concept further with your students, and help them pinpoint where the water drains internally.

2. **Learn about plastics in your life**

   Just taking a minute to observe all of the plastics in our lives can be eye-opening! The purpose of this section is for students to become more aware of the plastics around them and more savvy about the different types of plastics. We suggest trying simple activities such as these:

   - Make an inventory of all the plastics in a trash can at home or school. Sort by type of litter. For the plastics, sort by recycling code. Here is a terrific resource with good background information and a plastic recycling codes handout: Plastics Everywhere Educators Guide (Wisconsin Department of Natural Resources)

- The team, under your supervision, could do a quick litter pickup in your area (school yard, nearby stream, park, or beach). You can use an app like the Marine Debris Tracker from the University of Georgia to record and share your data on how much and what types of litter you find.

3. Research plastic pollution in the water

Next, the students learn more about plastic waste, plastic recycling, and microplastics with an emphasis on understanding the difference between prevention and remediation. The Team Guide offers several reliable resources to investigate plastic waste and how plastic waste is (or is not) managed. You can also use some sites from the Resources section of our website. It might be more efficient for the students to split up the sites and then come back together to share discoveries.

4. Choose a location

Plastic pollution in creeks, streams, lakes, and our ocean is a global problem and probably one in your own community, too. The team should now pick a specific waterway, river, or stream to investigate. The waterway can be anywhere in the world, including in your own community.

While it's important for the team to know about the entire water system of their chosen location (source to sea), their solution might be located in or address a section of the waterway. It's OK to help the students narrow their focus, if their problem or region seems to be too big to tackle.

PRO TIP: This is a good time to review the **Sources List** handout with the team and decide on a citation format.

ACT

Your Plastic Pollution Solution

Now it's time for the team to define and create their solution to reduce or prevent plastics from getting in their chosen waterway. The team will make two communication pieces to share their solution—a map and a video.

1. **Brainstorm**

   Because plastic pollution is such a big, global problem, use the Big Think handout to help the students decide which part of the problem they want to tackle. Three approaches are outlined: upstream, midstream, and downstream. Students should consider the problem in their chosen location and which approach they want to take.

2. **Create your solution**

   Now the team designs and makes their innovative solution that prevents or reduces plastic pollution in their chosen waterway.

   In the Team Guide, we've outlined four possible formats for the team's solution. The team should choose just ONE format for their solution:

   - Organize an event/campaign with a call to action that activates others
   - Create a visual presentation that can be used to educate others or inform policymakers
   - Design and build a physical model
   - Create a work of art (performance or visual) to engage the community

PRO TIP: Any objects or visual aids created as part of a *Tackling Plastic!* solution should be able to fit through a standard doorway. Teams should be able to move and set up their solution without adult help.

3. **Make a source to sea map**

Now it's time to do what National Geographic does best—map it! Students are urged to get creative with their map. The map can be a physical or digital representation of your selected region and waterway. It can be an interactive web map or story map, or a two-dimensional or three-dimensional map using paper and other materials.

- The map must
  - ❑ Show the location of the solution
  - ❑ Feature the chosen waterway's outlet to the sea
  - ❑ Include a legend, map scale, and north arrow
  - ❑ If physical, it can be no larger than 36 inches x 36 inches x 12 inches

Check out some of these free GIS and mapping tools available for students:

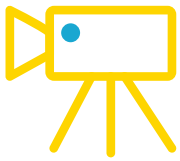
- ArcGIS for Schools Bundle is available at no cost from Esri for instructional use
- Getting started with GIS for educators
- More details on making Story Maps here
- Google My Maps
- Nat Geo MapMaker Interactive

4. **Develop your *Tackling Plastic!* Solution Summary video**

Finally, the team scripts and shoots a video to tell the story of their chosen plastic pollution problem, waterway, and solution. Fancy equipment is not required—videos will be appraised on creativity and effectiveness of getting the story across, not technical quality.

- The **Solution Summary video** should include:
  - ❑ A description of the problem
  - ❑ The team's solution (model, artwork, event/campaign, or visual presentation) and how it solves the problem
  - ❑ Why the team chose this solution and their process of getting there
  - ❑ The team map

- Requirements for the video:
  - ❑ The video may be no longer than **four minutes** in length.
  - ❑ The last shot of the video needs to be the **credits** reflecting the on-camera and behind-the-scenes roles that each team member played. This list can be handwritten on a poster or created and inserted digitally.



Make Your Story Heard

In this final phase of the GeoChallenge, the team brings together all of its work into a portfolio of sorts. This is a moment to be celebrated! Their work could make a big impact on the amount of plastic pollution reaching our waterways!

1. **Submit the project**

   Your job as the GeoChallenge Coach is to submit all of the project elements **by 11:59 PM EST on January 15, 2019**.

> **PRO TIP:** Help your team(s) establish a project schedule early on in the process so that all required elements are complete long before the deadline. This is especially important if you are coaching more than one team!

All complete projects will be appraised by National Geographic based on the Appraisal Rubric (pg. 29). Each completed project will be scored and receive constructive feedback. Teams with the highest-scoring projects will be invited to compete at regional competitions on March 29, 2019.

- **The project portfolio**

  Required for a project to be considered complete:

  - ❑ Video (4 min. max.)
  - ❑ 4 digital photos of the solution
  - ❑ 1 digital photo of the map
  - ❑ Digital photo/scan of signed Explorer's Code team doc
  - ❑ Challenge Brief (doc)
  - ❑ Sources List (doc)

2. **Teams can keep working on their projects after submission**

   Whether or not your students are invited to a regional competition, their work can make a lasting impact on the reduction of the amount of plastics in our waters. Encourage them to pursue their solutions and spread the word. Let us know about any major milestones at geochallenge@ngs.org.

Congratulations on completing the GeoChallenge!

2018-19 GeoChallenge Rules & Requirements

REGISTRATION

For a team of students to participate in the National Geographic GeoChallenge, a teacher, paid school employee, or representative of an informal education organization (e.g., museum, after-school program, Scouting group) must register as the GeoChallenge Coordinator.

There can be only one GeoChallenge Coordinator for a school/organization but a school/organization can have multiple teams. GeoChallenge Coordinators should register their school/organization and team(s) at NatGeoEd.org/GeoChallenge.

For homeschools/informal education organizations (e.g., museums, after-school programs, Scouting groups): A homeschool association or informal education organization can sponsor a team, and a parent, staff member, or representative of an informal education organization can register a team.

Fees. There is no fee for participating in the 2018-19 GeoChallenge.

ROLES

Student Teams. A minimum of four and a maximum of six students are required for each team. All student members must be in grades five through eight.

Students from different schools/organizations can participate on a team together, but all team members must live and go to school in the same state. Students can participate on only one team and a team can submit only one project. Children of employees of the National Geographic Society and National Geographic Partners are not eligible to participate in the GeoChallenge.

GeoChallenge Coordinator. This person is responsible for registering the team(s), delegating a Coach(es) or serving as the Coach, monitoring the progress of the project(s), and ensuring the National Geographic Explorer's Code and rules are followed. The GeoChallenge Coordinator must be a teacher, paid school staff member, or representative of a homeschool or informal education organization. The Coordinator also abides by the Explorer's Code. Upon registration, the GeoChallenge Coordinator will receive a unique identifier code. This code will be used by the school/organization's Coach(es) to submit the project(s).

GeoChallenge Coach. The GeoChallenge Coach is either the GeoChallenge Coordinator or is delegated by the Coordinator. The Coach must be an adult. (S)he may be a parent volunteer or community member. This person is responsible for recruiting the team, providing a time and place for the team to work together on a regular basis, making sure students work safely, and submitting materials to the National Geographic Society for appraisal if the team is applying to participate in a regional competition. The Coach introduces the National Geographic Explorer's Code and rules to the students and assures that they are followed. The Coach also abides by the Explorer's Code.

Parents and Volunteers may assist the Coach with recruitment, transportation, and providing space for team meetings. Parents and volunteers must also abide by the Explorer's Code.

REQUIREMENTS

Grade Level. All students on a GeoChallenge team must be in grades five through eight. Teams can include students of different grade levels within those specified grade levels.

School Eligibility. Any U.S. public school, private school, homeschool, or informal education organization with students in grades five through eight may participate in the GeoChallenge.

Only one project may be submitted per team, but a school/organization may have multiple teams.

Teams from schools in one of the U.S. Territories or Department of Defense Education Activity (DoDEA) schools abroad can participate and submit projects for appraisal. These teams will be appraised virtually at the regional level.

Adult Involvement. Adult involvement in the GeoChallenge must be minimal. GeoChallenge Coordinators, GeoChallenge Coaches, and adult volunteers cannot actively participate in the research, design, testing, or building of any parts of the project. Adult roles include organizing the team, providing meeting places, ensuring safety, and giving encouragement. Adults may instruct students on how to use tools—including mechanical tools, hardware, or software—needed to create the project, but they may not actively work on the project, contribute ideas, or provide solutions at the risk of disqualifying a team. Adults make sure rules are followed and remind students of the Explorer's Code, requirements, and deadlines.

Coach and Coordinator Eligibility. Individuals who have received funding or support from the National Geographic Society (e.g., fellows, grantees, explorers) or are employees of the National Geographic Society or National Geographic Partners may not participate in the GeoChallenge as a Coach or Coordinator.

Expenses. For the solution and map, students are encouraged to use available school materials or materials from home. Using repurposed or recycled materials is encouraged. GeoChallenge materials and videos should be created in a way that does not require expensive purchases. Spending large amounts of money on a GeoChallenge project will not increase a team's odds of advancing in the competition.

Appraisal of the projects will focus on design, innovation, and creativity, not on the value of the materials or equipment used to create the project. Basic video equipment, including mobile devices, may be used for the video submission. Appraisal of the videos will focus on creativity and not on the image quality or sophistication of recording or editing equipment used.

SUBMISSIONS

All complete projects submitted by the deadline will be appraised by the National Geographic Society. Based on scores from those appraisals, some teams will be invited to participate in a regional competition.

All materials must be submitted digitally via nationalgeographiceducation.submittable.com/submit/6481e9e6-3bd6-46a9-8712-aca746a985a9/2018-19-geochallenge-coach-registration by January 15, 2019, 11:59 PM EST to be considered for an invitation to participate in an in-person regional competition.

The GeoChallenge Coach must submit all of the following to the National Geographic Society for a project to be considered complete:

1. GeoChallenge project video. Name the video film using the following system: Team Name.GeoChallenge Coach Name.State Abbreviation. Example for Coach Rollins' team: TeamViper.Rollins.TX

2. Four photos from various angles of and distances to the project (for example, the solution or anything built/created for the project)

3. One photo of the map

4. Explorer's Code signed by the GeoChallenge Coordinator, the GeoChallenge Coach, and all team members

5. GeoChallenge Project Brief

6. GeoChallenge sources list

It is strongly encouraged that teams use only team-created original images, video, and music or materials that are in the public domain in producing their GeoChallenge video and project materials. For clarity, copyrighted materials (with a © or the word copyright) cannot be included without permission from the copyright owner. All sources must be cited.

Quotations from materials printed in newspapers, magazines, or books are permissible if an accurate citation is included.

Teams may continue to work on their project after submitting it for consideration to compete in a regional competition.

Teams that excel at the regional level will be invited to compete at the GeoChallenge national finals in Washington, D.C.

REGIONAL COMPETITION PARTICIPATION

Teams that submit complete GeoChallenge projects by January 15, 2019, at 11:59 PM EST may apply to participate in a regional competition. Invitations will be issued by the National Geographic Society about a month before the regional competitions. GeoChallenge regional competitions will take place on March 29, 2019.

Team Attendance. A majority of the team members as listed at the time of submission must be present at the regional competition. If the team has six members, at least four students must be present. If the team has five members, at least three students must be present. If the team has four members, at least three must be present.

Coordinator or Coach Attendance. Either the GeoChallenge Coordinator or the GeoChallenge Coach must accompany the team to the regional and national competitions.

PRIZES

Prizes will be awarded to teams that excel at the regional- and national-level events.

Individual students on teams that win the top prize at the national level of competition are not eligible to compete at the regional or national level in future years.

FAQ

Please visit us at https://www.nationalgeographic.org/education/programs/geochallenge/faq for an up-to-date list of questions and helpful answers.

QUESTIONS?

Please contact us at geochallenge@ngs.org with all other GeoChallenge inquiries.

CONDITIONS

THIS CONTEST IS VOID WHERE PROHIBITED. GeoChallenge teams, Coaches, and Coordinators agree that the GeoChallenge shall be subject to and governed by the laws of the District of Columbia and the forum for any dispute shall be in the District of Columbia, United States of America. To the extent permitted by law, the right to litigate, to seek injunctive relief, or to make any other recourse to judicial or any other procedure in case of disputes or claims resulting from or in connection with this GeoChallenge are hereby excluded and any entrant expressly waives any and all such rights. Certain restrictions may apply.

Participants also agree (a) to be bound by these Official Rules and (b) that the decisions of the National Geographic Society are final and binding with respect to all matters relating to the GeoChallenge.

All federal, state/provincial/territorial, and local taxes, fees, and surcharges and taxes (whether foreign or domestic, and including income, sales, and import taxes) on prizes are the sole responsibility of the prize winner. Winner will be issued an IRS Form W-9 with the Affidavit of Eligibility and Liability Release, a Publicity Release (where lawful), and a subsequent IRS Form 1099. In the event that the selected winner of any prize is/are ineligible, cannot be traced, or does/do not respond within ten (10) days to a winner notification, or refuses the prize, the prize will be forfeited and Sponsor, in its sole discretion, may choose whether to award the prize to another team or team member.

RIGHT TO CANCEL OR SUSPEND GEOCHALLENGE

If for any reason the GeoChallenge is not capable of running as planned, due to tampering, unauthorized intervention, fraud, technical failures, or any other causes beyond the control of the National Geographic Society that corrupt or affect the administration, security, fairness, integrity, or proper conduct of this GeoChallenge, the National Geographic Society reserves the right, at its sole discretion, to disqualify any individual(s) who tamper with the entry process or teams that fail to follow the rules, and/or to cancel, terminate, modify, or suspend the GeoChallenge.

TEAM GUIDE

Working Through the GeoChallenge

There are four stages to the *Tackling Plastic!* GeoChallenge:

ENGAGE > THINK > ACT > IMPACT

Once your team gets to IMPACT, you'll be ready to share your solution and submit your *Tackling Plastic!* project for appraisal.

GeoChallenge Timeline

Now – January 15, 2019

Design and create a solution to prevent or reduce plastic pollution in a waterway

Make a creative map about your chosen waterway and solution

Create a video featuring your solution and map

By January 15, 2019

Your Coach submits your project portfolio which includes:

- Your Solution Summary video (4 min. max.)
- Digital photos of your solution and map
- Digital photo/scan of your team's signed Explorer's Code
- Challenge Brief
- Sources List

March 29, 2019

GeoChallenge Regional Competitions (by invitation)

Late Spring 2019

GeoChallenge National Finals in Washington, D.C.

Thanks for joining the effort to reduce single-use plastic pollution in our waterways. You are joining student teams from across the United States that are identifying plastic pollution problems and creating solutions.

Plastics Are Overwhelming Our Waterways.

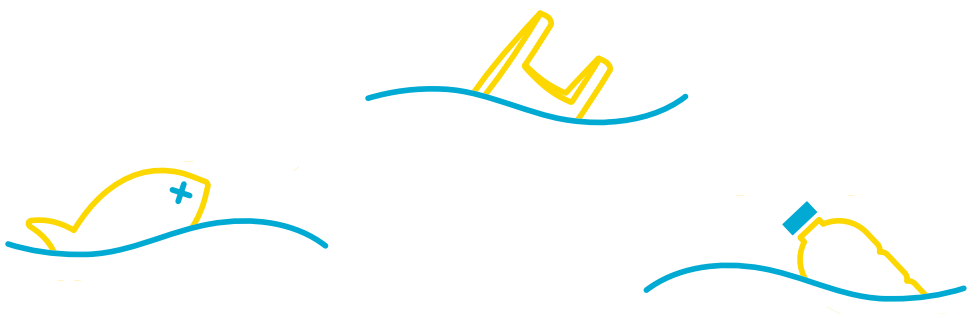
A lot of plastic pollution is made up of single-use plastics, like drinking straws, grocery bags, and balloons. It is estimated that 8.8 million tons of plastic pollution end up in the ocean every year. Items thoughtlessly dumped on land and in rivers make up much of that pollution. Ocean plastic is estimated to kill millions of marine animals every year, and it may even have negative effects on our health, too. If things keep on this way, researchers estimate that by 2050 there will be more plastic in the ocean than fish!

Guess What? We Can Turn the Tide!

Together, we can prevent single-use plastics from entering our waterways and ocean. Each one of us can make a difference, but as a team we can do even more. In this challenge, your team will go ***source to sea*** to investigate plastic pollution in a waterway and create a solution that prevents that plastic from flowing to the ocean.

Source to sea describes the flow of water from its inland source all the way to the ocean.

With *Tackling Plastic!*, you can explore the movement of water and plastic through any part of a watershed—a stream, a lake, a river, an estuary, or the ocean, as well as the surrounding land that makes up its drainage area. "Source" also points to the origin of single-use plastics. You might track plastic as it flows downstream or trace it all the way back to where it was first made.



ENGAGE

Think Like an Explorer

To start the GeoChallenge, build your team and commit to following the Explorer's Code.

- ❑ Read and discuss the Explorer's Code as a group. Each team member and your Coach need to sign it. Take a picture to upload with your project.
- ❑ Name your team! Have fun with it. Be unique!
- ❑ Review all of the pages of this Team Guide.

PRO TIP: You're going to be working together A LOT. This is a good time to get to know each other's strengths and interests. Who wants to focus on research? Who likes to make art? Who can keep everybody on track? Who can bring snacks?

THINK

Plastics in Our Water and Our Lives

Before developing a solution to keep plastics out of waterways, explore how plastics get there in the first place. Pollution is created and gets into our water systems in many ways. We might carelessly leave trash on the beach or in the school yard. Some fishermen throw damaged plastic nets off their boats. Pollution can be washed off of our streets into storm drains, canals, and rivers. Wind blows trash from landfills and our neighborhoods into the water.

1. **Learn where and how water flows in your community**

   With the following resources, you'll discover where a nearby body of water starts and trace it to its outlet.

   - ❑ Using the USGS Streamer website and resources in your library, identify a local waterway, its watershed, and its outlet. In other words, trace it from source to sea.
   - ❑ Identify your watershed on the USGS Science in Your Watershed website.

2. **Learn about plastics in your life**

   There are many ways to learn more about the plastics all around you—try one of the following activities with your Coach and team.

   - ❑ Make an inventory of all the plastics in your trash can at home or school. Identify and sort by type. Are any of them recyclable? Here's a visual guide to the recycling codes for plastics from the Wisconsin Department of Natural Resources.
   - ❑ Pick up some plastic litter in your area (school yard, nearby stream, park, or coastline). You can use an app like the Marine Debris Tracker from the University of Georgia to record and share your data on how much and what types of litter you find.

3. **Research plastic pollution in the water**

   Use a variety of reliable resources to investigate plastic waste and how plastic waste is (or is not) managed.

❑ The following links and others provided by your Coach will give you a good idea of the scope of the problem. You can divide up the websites between your team members and then compare notes.

- Plastic Pollution (Nat Geo Kids article)
- Types and Sources (NOAA's Marine Debris Program)
- Marine Debris (National Geographic encyclopedia article)
- Fast Facts About Plastic Pollution (National Geographic article)

Prevention vs. remediation

As you learn more about plastic pollution, consider whether cleaning up the plastic (remediation) or stopping the plastic before it hits the water (prevention) are feasible approaches to solving the plastic pollution problem.

4. Choose a location

Plastic pollution in creeks, streams, lakes, and our ocean is a global problem and perhaps one in your own community, too.

❑ Choose a waterway, river, or stream that your team would like to investigate. It can be water in your own community, the one you looked at earlier, or you can choose a location halfway around the world!

❑ Research the plastic pollution in your chosen waterway and surrounding region. Start big by looking at the entire system. Here are some questions to consider:

- What do you notice about the water system?
- Where do plastics seem to enter the system? Where do they concentrate? Where do they exit into the ocean?
- How does your area relate to human populations? Do plastics tend to enter near a city? Do they enter elsewhere?
- Are there places where humans have altered the water system (such as by building a dam)? What effects might that have?

PRO TIP: This is a good time to review the **Sources List** handout. As you are exploring websites and library resources, keep track of the ones that might be relevant to your project so you can cite them later.

ACT

Your Plastic Pollution Solution

Now it's time to define and create your solution to reduce or prevent plastics from getting in your chosen waterway. To communicate your solution you will create a map and a video.

1. **Brainstorm**

   Your team is probably coming up with lots of great ideas to prevent plastics from getting to the ocean. Because it's such a big, global problem, we've provided some ideas to spark your discussion.

   ❑ Use the **Big Think** handout (pg. 30) to help your group decide which part of the problem your team wants to tackle.

2. **Create your solution**

   You've defined the problem in your chosen location and you know which approach you want to take. Now, your team can design your innovative solution.

   Remember, there are all different types of explorers and a variety of ways that explorers solve problems and take action. Below, we've outlined four ways that your team can create your solution. Choose just **ONE** for your team's solution.

   ❑ Design and make your solution that prevents or reduces plastic pollution come alive in ONE of these ways:

   - Organize an event or campaign with a call to action that activates others
   - Create a visual presentation that can be used to educate others or inform policymakers
   - Design and build a physical model
   - Create a work of art (performance or visual) to engage the community

Note: Any objects or visual aids created as part of your Tackling Plastic! solution should be able to fit through a standard doorway. Teams should be able to move and set up their solution without adult help.

3. **Make a source to sea map**

Now it's time to do what National Geographic does best—map it! This is your chance to become a creative cartographer (a.k.a. a person who makes maps!). Maps are a great way to communicate your ideas and to help your audience relate to the problem you're solving. Think of your map as a way to visualize the information you want the viewer to know.

Your map can be a physical or digital representation of your selected region and waterway. Most importantly—be creative! You can make an interactive web map or story map. You can create a 2-D or 3-D map using paper and other materials. It can be drawn, molded out of clay, or made any other way you can think of!

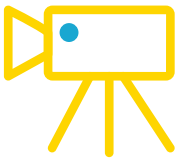
- Map requirements
  - ❏ Show the location of your proposed solution
  - ❏ Feature your selected waterway's outlet to the sea
  - ❏ Include a legend, map scale, and north arrow
  - ❏ It can be no larger than 36 inches x 36 inches x 12 inches

4. **Develop your *Tackling Plastic!* Solution Summary video**

Create a video to tell the story about your team's chosen plastic pollution problem, waterway, and solution. You don't need fancy equipment—your video will be appraised on its creativity and effectiveness of getting your story across, not its technical quality. Writing out a script can help your team get your point across.

PRO TIP: Put a human or animal face to your story to create an emotional connection with your viewers. For example, you could create a character that can tell his/her story about how plastic pollution in the waterways affects his/her life.

- In your **Solution Summary** video, be sure to include:
  - ❏ A description of the problem
  - ❏ Your team's solution (model, artwork, event/campaign, or visual presentation) and how it solves the problem
  - ❏ Why you chose this solution and your process of getting there
  - ❏ Your map



- Requirements for the video:
  - ❏ The video may be no longer than **four minutes** in length.
  - ❏ The last shot of the video needs to be the **credits** reflecting the on-camera and behind-the-scenes roles that each team member played. This list can be hand-written on a poster or created and inserted digitally.

PRO TIP: Make sure your story is heard. Before you start shooting your video, take some time to consider where the speaker is in relation to the audio recording device. No backs to the camera! Practice speaking slowly and clearly.

IMPACT

Make Your Story Heard

In this final phase of *Tackling Plastic!*, bring it all together in a project portfolio. Share your work with National Geographic for appraisal and continue to share your solution with your community and the world.

1. **Submit your project**

   Your GeoChallenge Coach must submit all of your project elements by 11:59 PM EST on January 15, 2019. Each completed project will be appraised based on the Appraisal Rubric (pg. 29) and receive constructive feedback. Teams that created the highest-scoring projects will be invited to compete at regional competitions on March 29, 2019.

   - **Your project portfolio**

     All of the items listed below are required for submission:

     - ❑ Video (4 min. max.)
     - ❑ 4 digital photos of the solution
     - ❑ 1 digital photo of your map
     - ❑ Digital photo/scan of your team's signed Explorer's Code
     - ❑ Challenge Brief (upload doc)
     - ❑ Sources List (upload doc)

2. **You can keep working on your project after submission**

   Whether or not you're invited to a regional competition, your team's work can make a lasting impact on the reduction of the amount of plastics in our waters. Let us know about any major milestones at geochallenge@ngs.org.

PRO TIP: Do we even need to say it?! Don't leave it until the last minute! Work as a team and with your Coach to set a schedule so you can get your project done well before the January 15th deadline.

HANDOUTS

Explorer's Code

The National Geographic Society believes that all students are natural explorers and that their curiosity and sense of adventure can launch them into a life of learning about and caring for our planet's inhabitants and resources.

Embracing the Explorer's Code is the first step of the GeoChallenge for students, GeoChallenge Coordinators, GeoChallenge Coaches, and volunteers.

1. As a group, read and discuss the following.

   National Geographic Explorer's Code

   - I am curious about the world and how it works. I seek out new and challenging experiences.
   - I am responsible. I am concerned for the welfare of other people, cultural resources, and the natural world.
   - I am respectful. I consider multiple perspectives, and honor others' views regardless of differences.
   - I appreciate our interconnected world. I value knowledge and how it increases my ability to solve global problems. This includes knowledge about human cultures, wildlife and habitats, and the changing nature of the planet.
   - I observe, research, and document the world around me, and attempt to make sense of my observations.
   - I collaborate with others to achieve goals.
   - I communicate experiences and ideas through language and media.
   - I solve problems. I generate, evaluate, and implement solutions to problems.
   - I am a decision maker. I am able to identify alternatives and weigh trade-offs to make well-reasoned decisions.
   - I am empowered to make a difference. I act on curiosity, respect, responsibility, and adventurousness, and I persist in the face of challenges.

2. Each team member, the Coach, and Coordinator should sign below indicating their willingness to adhere to these shared values as they work on the GeoChallenge.

Appraisal Rubric

When reviewing GeoChallenge projects, appraisers will use a rubric based on the following criteria to score and provide feedback on each project. The questions below the criteria let you know what the appraisers will be looking for in each GeoChallenge project.

The Solution	**Up to 100**
Effectiveness in addressing the reduction of plastic pollution *Is the solution clearly related to the problem? Does the solution help others engage with the issue? Does the team explain how their solution works? Does the team discuss how their solution will or could reduce plastic pollution? Does the video provide insightful discussion or analysis of the problem?*	Up to 50
Evidence of research *Is there evidence of research? Is the research reflected in the solution? Does the team provide evidence to support their solution?*	Up to 15
Innovation of the solution idea *Is the solution idea or concept new or unique? Does it express ideas in a new way? Does it successfully push boundaries? Does it provide a new approach to or improvement on an existing solution?*	Up to 20
Creativity of the solution design *Does the team use common materials or processes in a new, clever, or surprising way? Does the solution help others understand the urgency of the plastic pollution problem in new or unexpected ways?*	Up to 15
The Map	**Up to 60**
Communicating the team's source to sea story *Does the map show the team's chosen waterway and surrounding region? Is the map appropriate for the purpose? Does the map accurately depict the major geographic features of the region?*	Up to 20
Creativity *Is the map visually appealing and designed with a distinct style? Is it made of unexpected materials? Do the creative elements enhance the storytelling aspects of the map?*	Up to 20
Presence of required elements *Does the map have a north arrow, map scale, and legend? Does the map show the location of the solution and the chosen waterway's outlet to the sea?*	Up to 20
The Sources List	**Up to 25**
Sources List review *Are there items from a variety of sources (e.g., books, encyclopedias, databases, internet, interviews)? Are primary sources used? Do the sources seem credible? Does the team use a consistent format for their Sources List? Are the citations complete? Are images and media properly cited and credited?*	Up to 25

Big Think

National Geographic Explorers think about and discuss the big picture before tackling a problem. Think like an explorer and use these guiding questions to help define the scale and scope of your project. Discuss the questions below with your team. It might be helpful for your team to pick one area to focus on—upstream, midstream, or downstream—as you create your solution.

Upstream – *Plastic comes from somewhere.*

More and more plastic is created each year. Where does it come from? Are all plastics bad? What new materials could be as useful as plastic but more Earth-friendly? Could national, state, or local policies or regulations reduce the use of single-use plastic? How can individuals be persuaded not to use plastic? What actions can individuals take to avoid using plastic? **What is your solution for preventing plastic from being used, sold, bought, or even manufactured to begin with?**

Midstream – *Plastic is everywhere*!

We use plastic for lots of things—sometimes only once. Only 9 percent of the world's plastic is recycled. How can we reuse and recycle more plastics? Can existing plastics be made into new, practical, or artistic things? How can packing materials, straws, baggies, and plastic bottles be used more than once? Does replacing plastic always make sense? **What is your solution to better manage plastics already in your home, school, and community?**

Downstream – *Plastic lasts forever.*

Many plastics are not reused or recycled and end up entering the waste stream. Without intervention, plastics end up where they don't belong, like in rivers, lakes, and finally our ocean, where they harm marine life. Whether in a landfill or the deepest ocean trench, plastics do not go away on their own. What actions could individuals, organizations, or governments take to deal with mismanaged plastics? What is your solution for plastics that have already been mismanaged and are polluting our waterways?

Tackling Plastic! Challenge Brief

Each team must fill out and upload this completed form along with their video. All project elements are due January 15, 2019, by 11:59 PM EST.

Team name:

Team members:	

Coach's name:

Project name:

In your description, include what type of solution your team is presenting (physical model, work of art, visual presentation, event, or call to action).

Short description of your solution (75-100 words):

Sources List Guide

Your team will use many sources to gather information for your GeoChallenge project. You can interview experts, do internet searches, and find reference materials in the library, just to name a few. Your group's ultimate goal is to use all that information to create something new—a solution for dealing with plastic pollution.

As you are developing your solution, you will most likely be drawing ideas and inspiration as well as information from many resources. To "cite" a resource means to give credit to the source of your information or quote. If it's something that you didn't already know or that you read somewhere, you should cite that piece of information. It's OK to use other people's ideas to help you develop your project, you just need to give them credit for it!

It's also important to keep track of information and ideas along the way so that you can create a *Tackling Plastic!* Sources List to submit with your *Tackling Plastic!* project. The Sources List should cite the ideas, information, and quotes of others you have incorporated in your project.

There are different formats for citing sources like MLA, Chicago Manual of Style, and APA. Your *Tackling Plastics!* Sources List should follow the format recommended by your school or your GeoChallenge Coach. Most importantly, it should be consistent. Pick a format and stick with it!

Making your Sources List

- ❏ Work with your GeoChallenge Coach to choose a citation format.
- ❏ Write it down as you go! Make sure you write down the citation information as you are using a resource. Much easier than tracking it down later!
- ❏ Upload your Sources List with your other project materials. Include the following:
    - Team name
    - Project name
    - Formatted list of sources